Environmental Monitoring Report

Project Number: 36433
December 2009

PRC: Taiyuan-Zhongwei Railway Project
Environmental Monitoring Report – 2009 Annual Report

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

For: Ministry of Railways

Asian Development Bank

New Project Developed with Loan from Asian Development Bank

New Taiyuan – Zhongwei (Yinchuan) Railway

Environment Monitoring Report

(2009 Annual Report)

Beijing AOSIS Environment Protection Technology Co., Ltd.

December 2009

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1. DK383+100 borrow pit of No. 2 Bureau Group Co., Ltd. of CREC has been recovered and handed over to the local government for implementation.
2. The borrow pit to the right of DK528+100 of No. 12 Bureau Group Co., Ltd. of CREC has been recovered and remains to be handed over.
3. DK481+300 borrow pit of CSCEC has been recovered and remains to be handed over.
4. The spoil ground in East Zhongning Station of No. 21 Bureau Group Co., Ltd. of CREC has been developed for the Auto City by the local government.
5. 2# Spoil Ground covering appr. 65 mu in Paomaquan Village of No. 12 Bureau Group Co., Ltd. of CREC has been for parking lot.
6. DK383+400 Spoil Ground of No. 2 Bureau Group Co., Ltd. of CREC has been developed and built into road.
7. The spoil ground at the exit to Baijiashan Tunnel of No. 16 Bureau Group Co., Ltd. of CREC covers the area of 80 mu, and the retaining wall and drainage channels has been built for it.
8. The spoil ground at Chaoyangpo 1# Tunnel of CCCC has the smooth surface, and has been leveled off. The retaining wall has been built for it, and total area is 25.5 mu.
9. The spoil ground at the exit to Hongjingzi Tunnel of CSCEC has been developed into reclaiming land by filling and leveling the gully with the length of 200 m.
10. The spoil ground to the right of DK627+000 of No. 12 Bureau Group Co., Ltd. of CREC has vegetated vigorously.
11. The spoil ground at the exit to Niumaojing Tunnel of No. 12 Bureau Group Co., Ltd. of CREC has been leveled, and the trees have planted on the part of it.
12. DK619+000 spoil ground of CSCEC has been leveled and covered.
13. The spoil ground of 650,000 m^3 at the entrance to Xingwangmao Tunnel of CTG has been layered and sloped, and 80 kg of clover seed has been planted on the surface of this spoil ground, and now it is a carpet of green grass.
14. For spoil ground at the inclined well in Hongjingzi of CSCEC, the retaining wall has been built.
15. The spoil ground at 1# Xingwangmao Tunnel of CTG has been layered and sloped, and the retaining wall has been built.
16. The soil-retaining dam at Xialiujia Tunnel 1# Spoil Ground of CCCC
17. For the spoil grounds at Xiaoxiangzhai 1# and 2# Tunnel, the drainage channels have been dig, and the surface is level.
18. The spoil ground at the entrance to Wubao Tunnel of No. 16 Bureau Group Co., Ltd. of CREC has been layered and sloped.
19. The retaining wall along the construction detour at the spoil ground at the exit to Lishi Tunnel of China Coal No.3 Construction (group) Corporation Ltd.
20. The spoil ground at the exit to Liangshan Tunnel of No. 3 Bureau Group Co., Ltd. of CREC has been leveled, and the construction of retaining wall has been completed.
21. Girder Casting Yard of No. 9 Project Department of CCCC discarded the waste slag into the stream channel of Beichuan River.
22. The spoil ground at Wucheng Tunnel of CCCC affected the spillway of reservoir.
23. For 3# Spoil Ground at Huotangzhai of CCCC, the waste slag was discarded everywhere, so there was the great of restoration work.
24. The spoil ground at Yudingxiang Village of No. 21 Bureau Group Co., Ltd. of CREC has been still utilized by the civilians for stone mining.
25. The spoil ground at the exit to Suideng Tunnel and 4# Inclined Well Spoil Ground of No. 19 Bureau Group Co., Ltd. of CREC has been utilized by the local civilians for stone mining, rock rushing and rock powder processing.
26. Only a part of waste slag on Jundu Village Spoil Ground at Liulin Tunnel 2# Inclined Well of CCCC was transported.
27. Only a part of waste slag on Jundu Village Spoil Ground at Liulin Tunnel 2# Inclined Well of CCCC was transported.
28. Whether Siertan Mixing Station located in Haba Lake Nature Reserve of No. 12 Bureau Group Co., Ltd. of CREC will be retained is subject to the approval of competent authority of this nature reserve.
29. The construction detour bridge on Yongning Yellow River Grand Bridge of No. 14 Bureau Group Co., Ltd. of CREC should be dismantled ASAP, and the construction equipment and the litter in the stream channel should be cleaned thoroughly.

Preface

1.1 Briefing of the Project

The new Taiyuan – Zhongwei (Yinchuan) Railway is a project developed with loan from Asian Development Bank. This railway starts eastward from Taiyuan South station of Shi-Tai Railway, westward runs via Jinzhong city of Shanxi, xiaodian District of Taiyuan city and Qingxu County, enters Jiaocheng County, Shuiwen County and Fenyang City of Lvliang City, runs across Lvliang Mountain, and along the west bank of Dongchuan River, via Liulin County runs across Yellow River River and enters Wubao County, Suide County, Zizhou County, Hengshan County, Jingbian County and Dingbian County of Yulin City of Shaanxi Province as well as Yanchi County, Taiyangshan Planning Zone and Tongxin County of Wuzhong City of Ningxia Hui Nationality Autonomous Region and Hongshibao Development Zone of Ningxia, enters Zhongning County and Zhongwei City, and runs across Yellow River River and Baotou-Lanzhou Railway, and at Huangyanwan Station of Baotou-Lanzhou Railway, it is connected to Yingshuiqiao Marshalling Station; and this section is 747.051km long. Yinchuan rail connecting line starts at Dingbian Station, northwestward it runs through Dingbian County of Yulin City of Shaanxi Province and Yanchi County of Wuzhong City of Ningxia Hui Nationality Autonomous Region, goes by Ningdong Energy and Heavy Chemical Industrial Base and Lingwu city, runs across Huangye River and enters Yongning County of Yinchuan City; at Pingjibao Station of Baotou-Lanzhou Railway, it is connected to Yinchuan Station and this line is 193.464km long.

1.2 Environment Monitoring

The purpose of this environment monitoring work is to survey and evaluate how the environment protection measures are taken during the construction of the project, find out existing problems and put forward settlement suggestions on the basis of the design and environmental impact assessment of this project so as to determine whether to meet the requirements set forth in related environment protection laws and regulations and the requirements of the Ministry of Railway and Asian Development Bank. This environment monitoring report is to:

- Prove whether the environmental impact during the construction period meets the environment protection requirements proposed in the environmental impact assessment.
- Inspect the execution of the environment protection measures proposed in the environmental impact assessment.
- Identify and find any environmental problems that have not been predicted and propose solutions.
- Report the environment protection work of this project to the Ministry of Railway, Asian Development Bank and concerned departments.

The environment monitoring work for Taiyuan-Zhongwei (Yinchuan) Railway is undertaken by Beijing AOSIS Environment protection Technology Company Limited (hereinafter referred to as "AOSIS Company"), which is determined by means of public bidding. As required in the bid document, the service range for this project includes the environment monitoring work in the 4.5 years' construction period and 2 years after completion of Taiyuan– Zhongwei (Yinchuan) Railway (2006 - Dec. 2012); one monitoring report should be submitted by AOSIS Company every half year during construction period and the evaluation report should be submitted within 2 years of the completion of this railway.

Main contents to be included in the environment monitoring report are: environment monitoring design made according to the construction progress of the project, how various environment protection measures proposed in Environmental Impact Evaluation Report are put into effect (focusing on ecological protection, conservation of water and soil, protection of noise-sensitive points, sewage treatment), environment protection measures for construction camp, large temporary works and construction detour as well as virescence and re-cultivation, and the hygiene and disease control for staff.

On 18th Septemper 2009, AOSIS submitted the *Implementation Plan for Environment Monitoring and Investigation Work of Taiyuan – Zhongwei (Yinchuan) Railway Construction Project in 2009* to Taiyuan-Zhongwei (Yinchuan) Railway Co., Ltd.. From 7th to 26th November 2009, AOSIS Company took part in the joint

inspection of environmental protection organized by Engineering Department under Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd..

From 17th to 20th November 2009, a group of five, Head Chen and his party from Asian Development Bank, accompanied by Director Dong from Foreign Capital & Technical Import Center, Ministry of Railway, conducted the interim inspection on the construction of new Taiyuan – Zhongwei (Yinchuan) Railway.

This report is the construction environment monitoring report in 2009 and is prepared by:

Lu Xuecheng Senior engineer

Jiao Jusheng Engineer

2. Progress of the Project

2.1 The Client, Contractor and Supervisor of Taiyuan-Zhongwei (Yinchuan) Railway

The client of Taiyuan - Zhongwei (Yinchuan) Railway is Taiyuan-Zhongwei (Yinchuan) Railway Company Limited and the whole line has 6 project contractors of key control bid, 11 project contractors of comprehensive bid and 4 project contractors of beam fabrication bid, 5 units responsible for the removal and relocation of electric power circuit, communication optical cable and factory power circuit, 2 units for the temporary and permanent power, complex of 4 project contractors working at the back of the station and 10 engineering supervisors. It is started for official construction in February 2006 and the planned construction period is 54 months. Table 2-1 lists main project contractors and supervisors for the works before stations of Taiyuan - Zhongwei (Yinchuan) Railway.

Table 2-1: Project Contractors and Supervisor of Taiyuan – Zhongwei (Yinchuan) Railway

Bid section	Construction range	Mileage of bid section	Length of bid section (km)	Construction unit	Supervisor
ZK-I	Zhongning Yellow River Grand Bridge	DK706+943	4.459	No. 17 Bureau Group Co., Ltd. of CREC	Jinan Shunda Supervision Company
ZK-II	Yongning Yellow River Grand Bridge	LDK672+963	3.956	No. 4 Bureau Group Co., Ltd. of CREC	Shanghai Tianyou Engineering Consultation Company
ZK-III	Lvliangshan tunnel Entrance	DK119+157~DK129+255	20.222	No. 12 Bureau Group Co., Ltd. of CREC	China Railway No. 1 Engineering Construction Supervision Company
ZK-IV	Lvliangshan tunnel Exit	DK129+255~DK139+895	21.335	No. 3 Bureau Group Co., Ltd. of CREC	
ZK-V	Lishi Tunnel	DK163+325~DK173+400	9.948	CCTCG	
ZK-VI	Wubao Tunnel	DK226+600~DK239+500	12.305	No. 16 Bureau Group Co., Ltd. of CREC	Beijing Tieyan Construction Supervision Company
ZQ-I-1	South Taiyuan ~ DK20+300	South Taiyuan ~ DK20+300	17.678	No. 25 Bureau Group Co., Ltd. of CREC	Shenyang Railway Bureau Construction Supervision Company
ZQ-I-2	DK20+300~DK37+000	DK20+300~DK37+000	16.7	No. 15 Bureau Group Co., Ltd. of CREC	Shenyang Railway Bureau Construction Supervision Company

ZQ-II	DK37+000~DK247+817	DK37+000~DK247+817	169.316	China Traffic Construction Group	Shenyang Railway Bureau Construction Supervision Company, China Railway No. 1 Engineering Construction Supervision Company, Heilongjiang China Railway Construction Group Supervision Co., Ltd.
ZQ-V	Jinbian ~ East of Zhongning	DK405+800~DK692+650	287.85	China State Construction Engineering Corporation	Beijing Tieyan Construction Supervision Company, Jinan Shunda Supervision Company
ZQ-VI	Dingbian ~ Pingjibao	LDK513+300~Baotou K538+650	179.05	No. 12 Bureau Group Co., Ltd. of CREC	Beijing Railway Scientific Research Institute Supervision Company
ZQ-Ⅶ	DK247+817~ Suide	DK247+817~DK261+550	12.79	No. 21 Bureau Group Co., Ltd. of CREC, No. 19 Bureau Group Co., Ltd. of CREC	Jinan Shunda Supervision Company
	East of Zhongning ~ Yingshui Bridge	DK692+650~Baotou K696+800	71.55		
	Pingjibao ~ Yinchuan	Baotou K538+650~Baotou K524+514			
SJSI	Suide (incl.) ~DK284+310	DK261+550~DK284+310	20.610	No. 16 Bureau Group Co., Ltd. of CREC	Beijing Ruite Supervision Company
SJSII	DK284+310~ Weijialou (incl.)	DK284+310~DK329+650	45.340	No. 17 Bureau Group Co., Ltd. of CREC	Urumchi Railway Construction Supervision Consultation Company
SJSIII	DK361+150~Jinbian Station (excl.)	DK361+150~DK405+800	41.640	No. 2 Bureau Group Co., Ltd. of CREC	Tianjin Xinyatai Supervision Company
SJSIV	Hengshan Tunnel	DK329+650~DK345+419	15.769	No. 1 Bureau Group Co., Ltd. of CREC	Urumchi Railway Construction Supervision Consultation Company
SJSV	Xingwangmao Tunnel	DK345+419~DK361+150	15.731	China Railway Tunnel Group	Tianjin Xinyatai Supervision Company

2.2 Construction Progress of the Project

As of the end of October 2009, for the whole line, 96.92% of earthwork for roadbed has been finished, 90.92% for grand, large and medium bridges have been finished, 98.92% for tunnels has been finished, and 569.9 km (39.02%) of normal line has been tracked. Zhongning and Yongning Yellow River Grand Bridges have been completed.The engineering for the back of station has been in full swing.

Currently, the key engineering affecting the progress is Hengshan tunnel, which has completed 95.4%, remaining 529 m. The construction of other key tunnels has been completed.

The completed engineering workloads of Taiyuan-Zhongwei (Yinchuan) Railway are summarized in Table 2-2.

Construction progress of key works is as given in Table 2-3.

Table 2-2: Summary Table of Completed Engineering Workloads of Taiyuan-Zhongwei (Yinchuan) Railway (As of 30th October 2009)

Description	Unit	Designed quantity	Qty. completed totally in the year	Qty. completed since construction commencement	Finished designed quantity (%)
Investment	RMB10000	3210101	510660	2620576	81.64
Herein, for building installation	RMB10000	2591589	421820	2217923	85.58
Earthwork for roadbed	10000m^3	10173	257	9860	96.92
Herein: inter-zone earthwork	10000m^3	7595.0	149	7302	96.14
Earthwork for station and yard	10000m^3	2578.0	108	2558	99.22
Grand, large and medium bridge	linear meters	178001.0	11793	161833	90．92
Herein: grand bridge	linear meters	134425.0	10814	122142	90.86
Great bridge	linear meters	33273.0	691	30493	91.64
Medium bridge	linear meters	10303.0	288	9198	89.27
Small bridge	linear meters				
Culvert	Transverse linear meters	51819.0	1347	49170	94.89
Tunnel	Meter (hole) / tunnel	177568.0	9956	175657	98.92
Houses	m^2	160492	49754	57414	35.77
Herein: production house	m^2	147492	49754	57414	8.93
Living house	m^2	13000			
Tracklaying for normal line	km	1460.39	467.7	569.9	39.02
Tracklaying of station track	km	212.01	29.8	33.2	15.66
Laid ballast	10000m^3	432	127.3	161.9	37.48

Table 2-3: Completed Workloads of Key Works (As of 30th October 2009)

No.	Engineering Name	Project Scale (m)	Total work completed in 1 year (m)	Work completed since construction commencement (m)	% of work completed after commencement in total design work load	Project Contractor
1	Hengshan Tunnel (excavate commenced)	11448		11159	97.5	No. 1 Bureau Group Co., Ltd. of CREC
	Hengshan Tunnel (cavity finished)	11448		10919	95.4	

3. Environment Management

3.1 Environment Monitoring System

The client and operator of Taiyuan – Zhongwei (Yinchuan) Railway is Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd., who is responsible for environment protection of Taiyuan – Zhongwei (Yinchuan) Railway during construction and operation periods. Various local environment protection bureaus, state land resources bureau, and administrative bureau in the upper and middle reaches along Yellow River are responsible for the environment protection supervision and management work in the area under their own jurisdiction.

The water and soil conservation work of Taiyuan – Zhongwei (Yinchuan) Railway during construction is undertaken by Monitoring Center of Soil & Water Conservation and Environment of Yellow River. The supervisor of on-site construction is responsible for the supervision of daily environmental protection. In addition, Taiyuan-Zhongwei (Yinchuan) Railway Co., Ltd. engaged Xi'an Yellow River Construction Supervision Co., Ltd. to undertake the supervision work for water and soil conservation.

The environment monitoring work of Taiyuan – Zhongwei (Yinchuan) Railway during construction is undertaken by Beijing AOSIS Environment protection Technology Company Limited. The client and AOSIS Company shall

collect various monitoring data and AOSIS Company is responsible to prepare the monitoring report and submit it to the Ministry of Railways and Asian Development Bank. The monitoring organization worked out the block diagram on environment monitoring program of Taiyuan – Zhongwei (Yinchuan) Railway (Figure 3-1) as required in the monitoring contract.

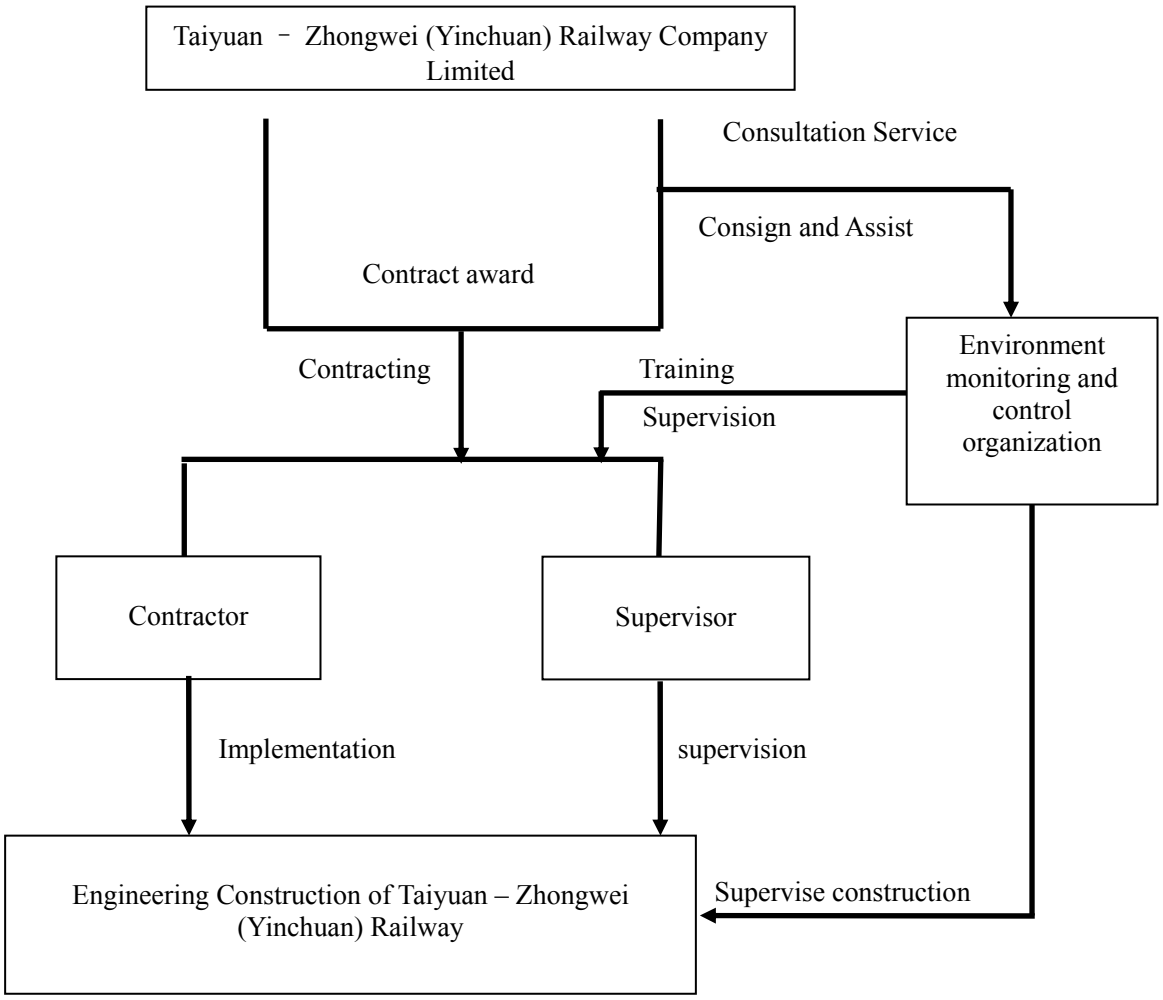

Figure 3-1: Block Diagram of Environment Monitoring System

Notes:

Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd.: as the project client, entrust and assist the monitoring organization in completing the monitoring work; when awarding the contract, sign up the environment protection contract with the contractor and the supervisor.

Project Contractor: implement the project and fulfill the environment protection work as required in the contract.

Supervisor: Supervise the quality of the project and the environment protection process as required in the contract.

Monitoring organization: as external monitoring organization, supervise the implementation of environment protection work and the fulfillment of environment protection work along the line and submit the monitoring report to the Ministry of Railways and Asian Development Bank.

3.2 Environment Management of Year 2009 during Construction

3.2.1 Environmental and Water Protection Management of Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. in 2009

Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. is responsible for the environmental and water protection management work along the whole line and shall appoint one full-time (part-time) senior engineer and one engineer for environmental and water protection. Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. has three commanding headquarters – Taiyuan, Suide and Yinchuan, each of which has part-time environment management person appointed. As required, the clauses on environment protection requirements should be incorporated into the bid invitation contract between the project client, constructor and supervisor.

To strengthen the management of environment and water protection work, Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. incorporated the contents of environment and water protection work as part of the Measures on Incentive and Restrict Mechanism as well as Comprehensive Assessment for various contractors. Total score is 100 scores. The contractor with the comprehensive assessment score of more than 95 will be rated as excellent, and the comprehensive assessment will be linked to acceptance and valuation of construction. Wherein, the environmental protection work accounts for 10% of total score, i.e. the contractors with the environmental protection work deducted more than 5 scores will be not rated as excellent. On this condition, the contractors will be constrained to pay great attention to and actively carry out the environment and water protection work.

To improve the work efficiency, the Engineering Department of Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. organizes the supervisor, monitoring and control organizations to conduct the joint inspections twice a year. After the first joint inspection in May 2009, from 7th to 26th November 2009, Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. organized the second joint inspection. During the joint inspection being conducted by the joint inspection team, snow fell in the provinces such as Hebei, Shanxi and Shaanxi, which brought certain difficulty to inspection and part of construction sites could not be inspected. The joint inspection team inspected 215 construction sites including borrow pit, spoil ground, railway station and bridge. After the inspection, the Construction Commanding Headquarter and water & soil reservation supervisor issued 17 Construction Site Instruction Sheets. Through the second joint inspection, Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. further understood the current correction situations of borrow pits and spoil grounds of various sections in order to lay the foundation of full restoration work next year.

On 26th November 2009, the 2nd Summary Meeting on Joint Inspection was held in Taiyuan by the Engineering Department of Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd., and Director Wang from Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. was present at the meeting and gave a speech to definitely require the restoration work of borrow pits and spoil grounds of various sections to be completed thoroughly next Spring.

3.2.2 Supervision on the Water & Soil Conservation

Besides having taken part in two joint inspections in this year, in order to complete the water and soil reservation supervision work well for receiving the inspection of leader from The Ministry of Water Resources on the water and soil reservation supervision work, Xi'an Yellow River Construction Supervision Co., Ltd., from 20th to 22th June 2009, entrusted by the Engineering Department of Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd., conducted the re-inspection on the borrow pits and spoil grounds that were required to be corrected in accordance with the Construction Site Instruction Sheet issued during the circuit supervision in the first half of this year. The contractors required to be corrected included No. 12 Bureau Group Co., Ltd. of CREC, CSCEC, No. 1 Bureau Group Co., Ltd. of CREC and CCCC responsible for Taiyuan – Zhongwei (Yinchuan) Railway. The Bulletin of Supervision on Water & Soil Reservation of Taiyuan – Zhongwei (Yinchuan) Railway was issued after the re-inspection. This survey found that the re-inspection conducted in the water and soil reservation supervision stations in June accelerated the correction progress of borrow pits and spoil grounds of above units. In comparison with the inspection in the first half of this year, there was a marked improvement on the restoration of the borrow pits and spoil grounds of above units.

4. Supervision and Inspection of Construction Bid Sections

In accordance with Contract on Water & Soil Reservation Supervision of New Taiyuan- Zhongwei (Yinchuan)

Railway, Monitoring Center of Soil & Water Conservation and Environment of Yellow River, in May and November 2009, took part in the joint inspection organized by the Engineering Department of Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. to conduct the site survey and monitoring on observation spots. The monitoring report will be submitted to the Engineering Department of Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. by the end of 2009.

Yu Shengqiang, senior engineer of Engineering Department of Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. is wholly responsible for the organization, coordination and investigaton of this joint inspection. This joint inspection gained great support and cooperation from contractors and supervisors of each bid section, which, hereby, express our sincere acknowledgement to Taiyuan- Zhongwei (Yinchuan) Railway Co., Ltd. and related units.

4.1 Investigation on the Implementation of Environment Protection

For more details on the implementation of environment protection of each bid section of Taiyuan- Zhongwei (Yinchuan) Railway, see Tables 4-1 to 4-18.

Table 4-1: Implementation Details of Environment Protection Measures of ZK-I Bid Section

Project Contractor: No. 17 Bureau Group Co., Ltd. of CREC					
Supervisor: Jinan Shunda Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	DK706+317.78~DK707+522.18	There is garbage treatment basin and garbage is periodically treated.	There is septic tank and wastewater is periodically disposed of.	Yes	Self-building construction camp for 260 persons
Tunnel longer than 1000m		Name of tunnel	Mileage	Construction progress	Remarks
Grand bridge, great bridge	Name	Mileage	Construction progress		Remarks
	Zhongning Yellow River Grand Bridge	DK704+739.93~DK709+164.51	Completed		
Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
Remarks	Zhongning Yellow River Grant Great Bridge has been completed and tracks have been laid. The construction site has been cleaned up.				

Table 4-2: Implementation Details of Environment Protection Measures of ZK-II Bid Section

Project Contractor: No. 4 Bureau Group Co., Ltd. of CREC					
Supervisor: Shanghai Tianyou Engineering Consultation Company Limited					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	No. 8 Production Team of Lijiaquan Village of Wutong Township	There is garbage treatment basin and garbage is periodically treated.	Treated in septic tank	Yes	
Tunnel longer than 1000m		Name of tunnel	Mileage	Construction progress	Remarks
Grand bridge, great bridge	Name	Mileage	Construction progress		Remarks
	Yongning Yellow River Grand Bridge	LDK670+ 992.54~LDK674+934.62	Completed		Discarded soil is partially utilized.
Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	Spoil ground of No. 4 Production Team of Lijiajuan Village	Designed to discard soil of $2\times10^4m^3$, which was used to level up ponds	Already discarded $1.8\times10^4m^3$		Bored piles from Yongning Yellow River Grand Bridge
Remarks	Yongning Yellow River Grant Great Bridge has been completed and tracks have been laid. The construction detour bridge has not been cleaned, and the construction equipment including steel tubes in the stream channel need to be removed.				

Table 4-3: Implementation Details of Environment Protection Measures of ZK-III Bid Section

Project Contractor: No. 12 Bureau Group Co., Ltd. of CREC					
Supervisor: China Railway No. 1 Engineering Construction Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Shanglinshe Village of Lijiazhuang Township of Fenyang	There is dustbin and garbage is periodically transported outwards to urban garbage station.	There are sedimentation tank and drainage facilities set up.	Yes	Self-built for 120 persons

	Yangjiazhuang Village of Lijiazhuang Township of Fenyang	There is dustbin and garbage is periodically transported outwards to urban garbage station.	There are sedimentation tank and drainage facilities set up.	Yes	Self-built for 120 persons
	Haojiazhuang Village of Lijiazhuang Township of Fenyang	There is dustbin and garbage is periodically transported outwards to urban garbage station.	There are sedimentation tank and drainage facilities set up.	Yes	Self-built for 120 persons
	Taohuadong of Xiangyang Village of Fenyang City	There is dustbin and garbage is periodically transported outwards to urban garbage station.	There are sedimentation tank and drainage facilities set up.	Yes	Self-built for 260 persons

Tunnel longer than 1000m	Name of tunnel	Mileage	Construction progress	Remarks
	Entrance section of Lvliangshan tunnel	DK119+145~DK129+255, DK119+143~DK129+255	The excavation work has been completed.	

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks
	Shanglinshe Great Bridge	Left DK118+890~DK119+066 Right DK118+941~DK119+113	Except for abutments of Left-0 and Right-0, the rest have been completed.	

Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	Entrance At 100m on right of DK119+160	Already discarded waste slag of $30\times10^4m^3$, area - 103.7mu, filling height - 25m, built retaining wall for protection	$46\times10^4m^3$	Already built temporary retaining and protection facilities, with permanent retaining wall to be actually built after waste slag is completely transported outward.	Opened
	At 300m on left side of 0# transverse gallery	Already discarded waste slag of $25.7\times10^4m^3$, area - 150mu, filling height - 25m, built retaining wall for protection	$26\times10^4m^3$	Already built temporary retaining and protection facilities, with permanent retaining wall to be actually built after waste slag is completely transported outward.	Opened

	At 1835m of right front of 1# inclined well	Already discarded waste slag of $48.0\times10^4m^3$, area - 90.57mu, filling height - 40m, built retaining wall for protection	$50\times10^4m^3$	Already built temporary retaining and protection facilities, with permanent retaining wall to be actually built after waste slag is completely transported outward.	Opened
	At 1835m of right front of 2# inclined well	Already discarded waste slag of $51\times10^4m^3$, area - 160mu, filling height - 25m, built retaining wall for protection	$50\times10^4m^3$	The protection for entrance to waste slag yard has been completed and the top surface has been earthed up.	Waste slag from inside of tunnel
Remarks	The spoil grounds at 0#, 1# and 2# inclined wells at the entrance to Lvliangshan Tunnel were investigated this time. The temporary houses for construction on the spoil ground at 0# inclined well need to be dismantled. The part of waste slag at the entrance to 1# and 2# inclined wells should be recycled and reused, and the spoil grounds should be restored ASAP after the project ends.				

Table 4-4: Implementation Details of Environment Protection Measures of ZK-IV Bid Section

Project Contractor: No. 3 Bureau Group Co., Ltd. of CREC					
Supervisor: No. 1 Railway Research Institute Supervision Company					
	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
Construction camp	Construction camp at exit of Lvliangshan Tunnel in Wucheng Town of Lvliang city	Garbage is collected together for periodical treatment.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-built for 300 persons
	Construction camp in 2# construction area at exit of Lvliangshan Tunnel in Wucheng Town of Lvliang city	Garbage is collected together for periodical treatment.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-built for 300 persons
	Construction camp in 3# construction area at exit of Lvliangshan Tunnel in Wucheng Town of Lvliang city	Garbage is collected together for periodical treatment.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-built for 300 persons

Tunnel longer than 1000m	Name of tunnel	Mileage	Construction progress	Remarks
	Exit section of Lvliangshan tunnel	DK129+235~DK139+930, DK129+235~DK139+915	Excavated 21,375m and lining built 21,300m	

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks

Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	DK133+500 Spoil ground	Already discarded waste slag of $105\times10^4m^3$, occupied a land of 136mu, retaining wall built at foot of the slope, and it is restored for re-cultivation	$105\times10^4m^3$	153 m of the retaining wall along the construction detour has been built. The main retaining wall will be constructed after the construction ends. The spoil ground has been leveled.	Discarded the waste slag into the Right gully.
	DK135+000 Spoil ground	Already discarded waste slag of $56\times10^4m^3$, occupying a land of 76mu, retaining wall built at foot of the slope, and it is restored for re-cultivation	$56\times10^4m^3$	The waste slag was transported by the local stone fragments ground, and this matter is in negotiation.	Discarded the waste slag into the Right gully.
	DK139+500 Spoil ground	Already discarded waste slag of $36\times10^4m^3$, occupied a land of 91mu, retaining wall built at foot of the slope, and it is restored for re-cultivation	$36\times10^4m^3$	365 m of the front retaining wall and ditch has been completed. The end retaining wall will be constructed after the construction ends. The spoil ground has been leveled.	Discarded the waste slag into the Right gully.

Remarks	The spoil grounds at 3#, 4# and 5# inclined wells at the exit to Lvliangshan Tunnel were investigated this time. The spoil ground at the exit has been leveled. The large quantity of stone fragments on the spoil ground at 5# inclined well has been transported by the local civilians. It is noted that the hand-over problems with local authority should be solved properly.

Table 4-5: Implementation Details of Environment Protection Measures of ZK-V Bid Section

Project Contractor: Taiyuan-Zhongwei (Yinchuan) Railway Construction Commanding Headquarters of China Coal Third Construction Group
Supervisor: No. 1 Railway Research Institute Supervision Company of Taiyuan – Zhongwei (Yinchuan) Railway

	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
Construction camp	Houmajia Village of Tianjiahui Subdistrict Office of Lishi District of Lvliang City	Garbage is collected together for periodical treatment.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 216 persons
	Shimenzui Village of Xishuba Subdistrict Office of Lishi District of Lvliang City	Garbage is collected together for periodical treatment.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 134 persons
	Gaolimao Village of Xishuba Subdistrict Office of Lishi District of Lvliang City	Garbage is collected together for periodical treatment.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 92 persons
	Shuangwudu Village of Xishuba Subdistrict Office of Lishi District of Lvliang City	Garbage is collected together for periodical treatment.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 210 persons

	Name of tunnel	Mileage	Construction progress	Remarks
Tunnel longer than 1000m	Lishi Tunnel	Entrance: DK166 +058 Exit: DK171+934	For entrance, 2680m completed For exit, 1666m completed For 1# inclined well, 2709m completed For 2# inclined well, 1609m completed	

	Name	Mileage	Construction progress	Remarks
Grand bridge, great bridge				

	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
Main borrow pit / spoil ground	Spoil ground at entrance	Already discarded waste slag of $40\times10^4m^3$, with retaining wall built at foot of slope for protection and grasses planted for virescence	$32.2\times10^4m^3$ Opened	Already completed protective retaining wall of 243m	

	Spoil ground of 1# inclined well	Already discarded waste slag of $34\times10^4m^3$, with retaining wall built at foot of slope for protection and grasses planted for virescence	$32.5\times10^4m^3$	Already completed 128m of retaining wall	
	Spoil ground of 2# inclined well	Already discarded waste slag of $36\times10^4m^3$, with retaining wall built at foot of slope for protection and grasses planted for virescence	$19.3\times10^4m^3$ for 1# inclined well, $18\times10^4m^3$ for 2# inclined well	Already completed protective retaining wall of 374.2m	
	Spoil ground at exit	Already discarded waste slag of $29\times10^4m^3$, with retaining wall built at foot of slope for protection and grasses planted for virescence	$20.0\times10^4m^3$ opened.	120.5m of protective retaining wall of spoil ground at hole mouth has been completed. 244 m of the second retaining wall has been competed.	
Remarks	The spoil grounds at the entrance, the exit and 2# inclined well were investigated this time. The retaining wall destroyed on the spoil ground at the exit need to be repaired.				

Table 4-6: Implementation Details of Environment Protection Measures of ZK-VI Bid Section

Project Contractor: No. 16 Bureau Group Co., Ltd. of CREC					
Supervisor: Beijing Tieyan Construction Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Qianwangjiashan Village of Wubao County	Garbage is collected in garbage basin for periodical outward clearing and transport.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 107 persons
	Tianjia Xiashan village of Wubao County	Garbage is collected in garbage basin for periodical outward clearing and transport.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 116 persons
	Lujiawa of Yihe Town of Suide County	Garbage is collected in garbage basin for periodical outward clearing and transport.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 253 persons

	Xinguandao of Yihe Town of Suide County	Garbage is collected in garbage basin for periodical outward clearing and transport.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 90 persons
	Qiaoshang Village of Yihe Town of Suide County	Garbage is collected in garbage basin for periodical outward clearing and transport.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 29 persons
	Hebaiwan of Yihe Town of Suide County	Garbage is collected in garbage basin for periodical outward clearing and transport.	Sedimentation tank is built and wastewater is discharged after treatment.	Yes	Self-building construction camp for 106 persons

Tunnel longer than 1000m	Name of tunnel	Mileage	Construction progress	Remarks
	Wubao Tunnel	DK227+080~DK239+390	Excavation completed 12,100m	

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks
	2# Great Bridge of Qianwangjiashan	DK226+697.36~ DK227+073.76	306m	

Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	Spoil ground at 450m on left side of DK227+000	Already discarded waste slag of $25 \times 10^4 m^3$, with retaining wall built for protection	$25 \times 10^4 m^3$	Partially building retaining wall.	Design blueprint unavailable
	Spoil ground at 900m on right side of DK229+900	Already discarded waste slag of $33 \times 10^4 m^3$, with retaining wall built for protection	$33 \times 10^4 m^3$	Executed	

	Spoil ground at 255m on right side of DK231+800	Already discarded waste slag of $44\times10^4m^3$, with retaining wall built for protection	$44\times10^4m^3$	Partially building retaining wall.	Design blueprint unavailable
	Spoil ground at 700m on left side of DK236+600	Already discarded waste slag of $28.33\times10^4m^3$	$28.33\times10^4m^3$	Not executed yet	Design blueprint unavailable
	Spoil ground at 200m on right side of DK237+700	Already discarded waste slag of $30\times10^4m^3$, with retaining wall built for protection	$30\times10^4m^3$	Executed	
	Spoil ground at 200m on left side of DK239+700	Already discarded waste slag of $25\times10^4m^3$, with retaining wall built for protection	$25\times10^4m^3$	Not executed yet	Design blueprint unavailable
Remarks	The spoil grounds at the entrance to Wubao Tunnel and 1# inclined well were investigated this time. The spoil ground at 1# inclined well has the affection on the water well of local civilians, so the well head of the inclined well should be raised. The spoil ground at the entrance is very good. The handover job should be done properly.				

Table 4-7: Implementation Details of Environment Protection Measures of ZQ-I-1 Bid Section

Project Contractor: No. 25 Bureau Group Co., Ltd. of CREC					
Supervisor: Shenyang Railway Bureau Construction Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Beiliubao Village	Garbage is classified when stacked and centralized when collected.	Treated in sedimentation tank	Yes	40 persons
	Concrete mixing station in Shanshui Village	Garbage is centralized when stacked; leaving the garbage at the spoil ground for the construction waste, and the filling up treatment wholesomely for the household garbage.	Treated in sedimentation tank	Yes	30 persons

Tunnel longer than 1000m	Name of tunnel	Mileage	Construction progress	Remarks
	None			

	Name	Mileage	Construction progress	Remarks
Grand bridge, great bridge	Huolianzuoxian grand bridge	HLDK12+465.24-HLDK16+691.25	807 foundation piles, or 98%, completed; 133 pier shafts, or 90% completed.	4226.28 m
	Huolianyouxian grand bridge	HL right DK12+388.38-HL right DK16+691.52	720 foundation piles, or 84%, completed; 48 pier shafts, or 32% completed.	4303.14 m
	Kuashitai Railway Grand Bridge	DK9+567.29-DK 16+691.52	1099 foundation piles, or 47%, completed; 42 pier shafts, or 14% completed.	7124.23 m
	Kuazonghe Corridor Grand Bridge	DK16+691.52-DK17+712.19	694 foundation piles, or 97%, completed; 27 pier shafts, or 44% completed.	1020.67 m

Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	Borrow pit for Dongzhuang village of Shitie town, Yuci district.	200×10^4 m^3	Has not been used.		
Remarks	The comprehensive access grand bridge and the spoil ground at Dongzhuang Village were investigated, and the construction is in progress.				

Table 4-8: Implementation Details of Environment Protection Measures of ZQ-I-2 Bid Section

Project Contractor: No. 15 Bureau Group Co., Ltd. of CREC					
Supervisor: Shenyang Railway Bureau Construction Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Houjiazhai of Beige Town of Xiaodian District of Taiyuan	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 40 persons
	DK21+400	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 100 persons
	DK21+400	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 170 persons
	DK26+200	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 180 persons
	DK29+300	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 60 persons
	DK29+300	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 480 persons
	DK29+300	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 21 persons
	DK32+800	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 100 persons
	DK32+800	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 120 persons
	DK36+600	Collected together to transport to garbage yard	Treated in sedimentation tank	Yes	Self-built for 100 persons

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks
	Beigetai long expressway grand bridge (left line)	DK24+008.14 （total length 5636m）	2,194 drilled piles, 95.5 bearing platforms and 87 pier shafts have been finished.	
	Beigetai long expressway grand bridge (right line)	DK24+004.31 （total length 5636m）	19 drilled piles, equivalent to 10 m of finished bridge having been finished.	

	208 National Highway Grand Bridge	DK35+750.73	785 drilled piles, 65 bearing platforms, 63 dun sets and 47 continuous beams have been finished.		
Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	Xihao Village Borrow Pit	Borrowed pit of 173 $\times 10^4$m3; perform the excavation after cleaning up the surface; restore the vegetation after the construction ends.	112 $\times 10^4 m^3$		Not determined
					Not determined
Remarks	Nanyu Borrow Pit and Liujiabao Grand Bridge across No. 208 National Highway were investigated this time. The borrow pit has been leveled basically. The protection slope was built by the local authority, which has confirmed through negotiation. The construction detour of grand bridge will be still used, and need to be re-cultivated after the project ends.				

Table 4-9: Implementation Details of Environment Protection Measures of ZQ-II Bid Section

Project Contractor: China Traffic Construction Group					
Supervisor: Shenyang Railway Bureau Construction Supervision Company, China Railway No. 1 Engineering Construction Supervision Company, Heilongjiang China Railway Construction Group Supervision Co., Ltd.					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Xiqingdui of Qingxu County	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	Self-built for 111 persons
	Wucun Village of Qingxu County	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	lent for 30 persons
	East Fenyang Village of Jiaocheng County	Reclaimed specifically.	Treated in sedimentation tank	Yes	lent for 50 persons
	Baozi Village of Wenshui County	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	Self-built for 28 persons
	Madong Village of Wenshui County	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	Self-built for 25 persons

	Xinghua Village of Fenyang City	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	Self-built for 23 persons
	Shuiquan Village of Fenyang City	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	Self-built for 45persons
	Wucheng Township of Lishi District	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	Self-built for 32 persons
	Shangwang ying of Wucheng Township	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	Self-built for 26 persons
	Chejiawan Village	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
	Shang'an Village of Lishi	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	Self-built for first subsection
	Wangjiata Village	Collected for stocking and treatment	Collected for discharging	Yes	Self-built for second subsection
	Shang'an Village of Lishi	Collected for stocking and treatment	Collected for discharging	Yes	Self-built for the project department
	Shangbaish uang Village	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
	Xiabaishua ng Village	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
	Wangjiazhu ang Village	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
	Wangjiazhu i Village	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
	Tangjiagou Village	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
	Jundu village	Garbage is collected and sent to garbage station.	After treated in sedimentation tank, discarded into local drainage channel; there is septic tank built	Yes	Partly Self-built and partly rent

	Qinghegou grand bridge	Transported outward to garbage station	After treated in sedimentation tank, discarded into local drainage channel; there is septic tank built	Yes	Self-built for 160 persons
	Houmiaosh an bridge	Transported outward to garbage station	After treated in sedimentation tank, discarded into local drainage channel; there is septic tank built	Yes	Self-built
	Wubao station	Transported outward to garbage station	After treated in sedimentation tank, discarded into local drainage channel; there is septic tank built	Yes	Self-built
	Leijiagelao of Yihe	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	People evacuated and land restored to cultivation
	Danangou of Mantangch uan	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
	Xuejiasi of Mantangch uan	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
	Zhaojiapu of Mantangch uan	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
	Xunjiacha of Mantangch uan	Garbage is collected and sent to garbage station.	Treated in sedimentation tank	Yes	
Tunnel longer than 1000m		Name of tunnel	Mileage	Construction progress	Remarks
		Huangzhang 1# Tunnel	DK113+608~DK115 +400	Dug into 1772m, the rest of 20m	
		Huangzhang 2# Tunnel	DK116+760~DK117 +965	Dug into 1200m	
		Tunnel of Shanglou bridge	DK158+287~DK15 9+895	Has been opened	
		Yiju 2# Tunnel	DK156+855~DK15 8+254	Dug into 944m	
		Wangjiahui tunnel	DK187+939~DK19 0+030	Has been completed.	
		Xiabaishuang 3# Tunnel	Reconstructed DK192+550~Recon structed DK193+919	Has been completed.	

		Wangjiazhuang tunnel	Reconstructed DK193+970~Reconstructed DK195+712	Has been completed.	
		Baishupin Tunnel	DK220+398 ～ DK221+780	Has been completed.	
		Liulin Tunnel	DK208+367~DK215+998	Has been completed.	
		Name	Mileage	Construction progress	Remarks
Grand bridge, great bridge	Wangwu Xiaohe Grand bridge	DK37+622.38	Has been completed.		
	Yiwang grand bridge	DK59+496.15~DK61+650	Has been completed.		
	Fenghaoliang Dadongchuan grand bridge	DK140+062.35~DK140+813.16 right DK140+096.35~DK140+826.48 left	Has been completed.		
	Beichuan River Grand Bridge	Reconstructed DK174+243.09 ~Reconstructed DK176+123.81	Has been completed.		
	Liuwan Fenhe Grand Bridge	DK46+223.83~DK47+616.9	Has been completed.		
	Baishi Nanhe Grand Bridge	DK62+972.86	Has been completed.		
	Ciyao River Grand Bridge	DK66+112.66	Has been completed.		
	Wenyu River Grand Bridge	DK82+431.61	Has been completed.		
	Madongcun Grand Bridge	DK89+160.2	Has been completed.		
	Tai-Fen Expressway Grand Bridge	DK92+196.7	Has been completed.		
	Longfangli Grand Bridge	DK147+656.72~DK148+288.68	Has been completed.		

	Xiawanying Grand Bridge	DK152+589.05~DK153+285.75	Has been completed.	
	Yangshi Xiaodongchuan Grand Bridge	DK159+967.95 ~DK160+847.39	Has been completed.	
	Xiangyang River Grand Bridge	DK113+239.99	Has been completed.	
	Zhaojiazhuang Grand Bridge	DK175+889.5 ~DK177+540.42	Has been completed.	
	Xiyadi Grand Bridge	DK178+836.49~DK180+125.8	Has been completed.	
	Hejiata Sanchuanhe Grand Bridge	Reconstructed DK185+856.4	Has been completed.	
	Longmenhui Sanchuanhe Grand Bridge	Reconstructed DK197+612.5	Has been completed.	
	Liulin Sanchuanhe Grand Bridge	Reconstructed DK203+281.63	Has been completed.	
	Mucun Grand Bridge	DK207+730.36	Has been completed.	
	Qinghegou Grand Bridge	Reconstructed DK223+168.69	Has been completed.	
	Yihe Town Grand Bridge	DK223+168.69	Has been completed.	
	Xuejiashi Grand Bridge	Reconstructed DK245+385.93	Has been completed.	
	Wubao Yellow River River Grand Bridge	DK216+424.07 (860.8m)	Has been completed.	

Main borrow pit /	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks

spoil ground	Xiliangquan borrow pit	$70\times10^4m^3$	$30\times10^4m^3$	Temporary protection made while taking soil	
	Xinmincun borrow pit	$80\times10^4m^3$	$45\times10^4m^3$	Temporary protection made while taking soil	
	Sanjiaocun borrow pit	Already taken soil of $180\times10^4m^3$ with vegetation restored	$160\times10^4m^3$	In use	
	Kaishan borrow pit	Already taken soil of $90\times10^4m^3$	$32\times10^4m^3$	Has been protected.	
	Xiaonanyu borrow pit	Already taken soil of $130\times10^4m^3$	$70\times10^4m^3$	Has been protected.	
	Nailin borrow pit	Already taken soil of $20\times10^4m^3$ with vegetation restored	$5\times10^4m^3$	In use.	
	Podi borrow pit	Already taken soil of $20\times10^4m^3$ with vegetation restored	$4.6\times10^4m^3$	In use.	
	Shihou borrow pit	Already taken soil of $120\times10^4m^3$ with vegetation restored	$10.7\times10^4m^3$	In use.	
	Borrow pit for Wucheng Station	$69\times10^4m^3$	$53\times10^4m^3$	Has been leveled off.	
	Spoil ground for Yiwang Grand Bridge	$9\times10^4m^3$	$6\times10^4m^3$	Leveled off for re-cultivation	
	Spoil ground for Fenhe Grand Bridge	$9.7\times10^4m^3$	$7\times10^4m^3$	Leveled off for re-cultivation	
	Spoil ground for DK72+983	$3.1\times10^4m^3$	$3.1\times10^4m^3$	Leveled off for utilization.	
	Spoil ground for Wucheng 1# Tunnel	$12.5\times10^4m^3$	$8.9\times10^4m^3$	Already leveled off	
	Spoil ground for Youfangping Tunnel	$11.4\times10^4m^3$	$11.4\times10^4m^3$	Temporary waste slag retaining wall built	
	Spoil ground for Entrance to Yiju 2# Tunnel	$19.1\times10^4m^3$	$12.3\times10^4m^3$	Already protected	
	At around 500 m of Entrance & Exit to Shanglouqiao Tunnel	$21.7\times10^4m^3$	$17.2\times10^4m^3$	Already leveled off	

	Spoil ground for Xiaoyangzhai Tunnel	Already discarded waste slag of $12.85\times10^4m^3$ with retaining wall built for protection and virescence taken for slag top	$12.8\times10^4m^3$	Already protected	
	Spoil ground for Chaoyangpo tunnel	$12.92\times10^4m^3$, with retaining wall built for protection and virescence measures taken for slag top	$11.9\times10^4m^3$	Already protected	
	Spoil ground for Chujiagou Station	$106\times10^4m^3$	$90.7\times10^4m^3$	Already protected	
	Spoil ground at exit of Huangzhang 1# tunnel	$13\times10^4m^3$, with retaining wall built for protection	$10.9\times10^4m^3$	Already protected	
	Spoil ground at entrance of Huangzhang 1# Tunnel	$12\times10^4m^3$, with retaining wall built for protection	$9.7\times10^4m^3$	Already protected	
	Spoil ground for Huangzhang 2# tunnel	$17.83\times10^4m^3$	$15.9\times10^4m^3$	Already protected	
	Spoil ground at exit of Wangjiahui Tunnel	$12.6\times10^4m^3$	$12.6\times10^4m^3$	Leveled as land	
	Spoil ground at entrance of Xiabaishuang 3# tunnel	$18.5\times10^4m^3$	$16\times10^4m^3$	Leveled as land	Backfilled waste trough as land
	Spoil ground at entrance of Wangjiazhuang Tunnel	$23.5\times10^4m^3$	$19.1\times10^4m^3$	Leveled as land	
	Spoil ground at entrance of Liulin Tunnel at DK207+730	Already discarded waste slag of $33.7\times10^4m^3$, with retaining wall built for protection	$33.7\times10^4m^3$	Protection scheme determined and under construction	
	Spoil ground of 1# inclined well of Liulin Tunnel	Already discarded waste slag of $27\times10^4m^3$, with retaining wall built for protection	$27\times10^4m^3$,	Protection scheme determined and under construction	
	Spoil ground of 2# inclined well of Liulin Tunnel	Already discarded waste slag of $67.8\times10^4m^3$, with retaining wall built for protection	$50\times10^4m^3$	The build of retaining wall has been finished.	
	Spoil ground at exit of Liulin Tunnel at DK211+550	Already discarded waste slag of $33.7\times10^4m^3$, with retaining wall built for protection	$30\times10^4m^3$	Retaining wall already completed	
	Spoil ground for Baijiagou Tunnel	$6\times10^4m^3$ with retaining wall and sediment storage dam built	$6\times10^4m^3$	Retaining wall already completed	
	Spoil ground for Houmiaoshan Bridge and Xingzita tunnel	$6\times10^4m^3$ with retaining wall built	$6\times10^4m^3$	Retaining wall already completed	
	Qinghegou spoil ground	$20\times10^4m^3$ with retaining wall built	$19\times10^4m^3$	Retaining wall already completed	

	1# Spoil ground of Wujiabao Station	$60\times10^4m^3$ with retaining wall built and virescence measures taken	$60\times10^4m^3$	All measures will be taken by local government	
	2# Spoil ground of Wujiabao Station	$50\times10^4m^3$ with retaining wall built and virescence measures taken	$50\times10^4m^3$	Retaining wall already completed	
	3# Spoil ground for Wujiabao station	$30\times10^4m^3$ with retaining wall built and virescence measures taken	$30\times10^4m^3$	Retaining wall already completed	
	Spoil ground at exit of Danangou Tunnel	$11.6\times10^4m^3$, with retaining wall built for protection	$8\times10^4m^3$	Retaining wall already completed	
	Spoil ground at exit of Xizhigou Tunnel	Used directly for filling and building roadbed	$3\times10^4m^3$	Temporary protection	
	Spoil ground at exit of Xuejiashi tunnel	$11.6\times10^4m^3$, with retaining wall built for protection	$11.6\times10^4m^3$	Retaining wall already completed	
Remarks	The construction sites of total 90 spoil ground and 1 borrow pit under No. 9, No. 8, No. 7, No. 6, No. 5, No. 4 and No. 1 Project Management Departments were investigated. Investigation found that the restoration of No. 5 and No. 6 Project Management Departments was very well; the restoration work of No. 9 Project Management Department represented great improvement than that in the first half of this year; in No. 7 and No. 1 Project Management Departments, there were so many problems, for instance, most of spoil grounds had not renovated, so the commanding headquarter required them to draw out the renovation scheme and implementation plan.				

Table 4-10: Implementation Details of Environment Protection Measures of ZQ-V Bid Section

Project Contractor: China State Construction Engineering Corporation					
Supervisor: Beijing Tieyan Construction Supervision Company, Jinan Shunda Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Songqu Village Dong Keng Township, Jingbian County	Already set up garbage treatment basin and periodically collected for deep burying	Discharged via septic tank into original drainage system	Yes	Rent private houses for 30 persons
	Right to Nanwa Village, Dashuikeng Township	Already set up garbage treatment basin and periodically collected for deep burying	Discharged after treatment in sedimentation tank and septic tank.	Yes	Self-built for 30 persons
	Dashuikeng Township	Garbage basin is set and garbage is periodically treated; the method of treatment is reclaim or burn.	The sedimentation tank and septic tank are available while no drainage facilities at the camp.	The environment protection promotion flags are available.	Camp is lent for 20 persons
	Huianbao Township Yanhuanding Post for Water Resources (Project Department)	Piled up together for periodical treatment.	Sewer pipe is set.	Yes	Rent
	Hongsibao Township No. Project Department Construction Camp	Garbage basin is set and garbage is transported into Garbage Station for treatment.	Production wastewater is settled at appointed points and discharged after treatment.	Yes	Self-built for 30 persons
Tunnel longer than 1000m		Name of tunnel	Mileage	Construction progress	Remarks
		Hongjingzi Tunnel (Entrance)	DK550+100~DK551+850	Has been completed	Waste slag is discarded into DK549+800 Spoil ground
		Hongjingzi Tunnel (inclined well)	DK551+850~DK553+220	Has been completed	
		Hongjingzi Tunnel (exit)	DK553+220~ DK555 + 226	Has been completed	Waste slag is discarded into the spoil ground at exit and partially used for backfill of roadbed

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks
	Huojiahepan Hongliuhe Grand Bridge	DK433+994 546.5m	Has been completed	
	Paijianhe Great Bridge	DK465+027.69 146.32m	Has been completed	
	Xichenquan Great Bridge	DK470+956.61	Has been completed	
	Zhengjiagou Bridge	DK541 +221 209.54m	Has been completed	
	Hongzhuang Bridge	DK526+317.85-DK526+464.16	Has been completed	
	Yangjiagou Grand Bridge	DK549+363.23 665m	Has been completed	
	Shizhigou Bridge	DK651+915.92 352.99m	Has been completed	
	Mahuanggou Grand Bridge	DK675+379.33 804.36m	Has been completed	
	Shuangjingzi Grand Bridge	DK680+800.19 669.62m	Has been completed	
	Shuangjingzi Bridge	DK679+567.51	Has been completed	
	Shigangzi Bridge	DK686+040.04	Has been completed	
	Dazigou Bridge	DK687+617.60	Has been completed	
	Jiuzuofen Great Bridge	DK688+406.35	Has been completed	
	Zhangxiaotougou Bridge	DK689+210.00	Has been completed	
	Hongshibao 1st Pumping station Bridge	DK690+820.77	Has been completed	
	Hongshankouzi Bridge	DK691+400.45	Has been completed	
	Yuanyichang Bridge	DK692+495.01	Has been completed	
	Duyaogou Grand Bridge	DK582+543.01	Has been completed	
	Wujitang Bridge	DK565+181.41	Has been completed	
	Wangjiagada Bridge	DK588+803.51	Has been completed	

	Grand bridge crossing Qing-Yin Expressway	DK504+297.95 1403.15m	Has been completed	
	Grand Bridge crossing 307# National Highway	DK509+505.11	7 pier shaft unfinished	
	Maijiatai Hongliugou Grand Bridge	2DK667+757.125-DK670+325.15	Has been completed	
	Shageda Grand Bridge	DK653+942.07-DK654+662.82	Has been completed	
	Xinjiawanzi Grand Bridge	DK635+142.35-DK 636+402.19	Has been completed	
	Bazhuangzi Grand Bridge	DK623+166.014~DK624+460.84	Has been completed	
	Mahuangkeng Bridge	DK620+295.40~DK620+440.40	Has been completed	
	Laoyanchi Bridge	DK603+574.90~DK603+753.90	Has been completed	
	Wangjiashuitang Bridge	DK592+767.35~DK592+945.16	Has been completed	

Main borrow pit and spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	DK406+900 Right borrow pit	Already taken soil of $36\times10^4m^3$, occupied a land of 140mu with retaining wall built, with vegetation already restored	$36\times10^4m^3$	leveling already completed	Has been completed
	DK407+230 Right borrow pit	Already taken soil of $40\times10^4m^3$, area - 150mu with retaining wall built, with vegetation already restored	$40\times10^4m^3$	leveling already completed	Has been completed
	DK407+750 Right borrow pit	Already taken soil of $27\times10^4m^3$, covering an area of 100mu with retaining wall built and vegetation planted	$27\times10^4m^3$	leveling already completed	Has been completed
	DK408+150 Right borrow pit	Already taken soil of $35\times10^4m^3$, covering an area of 130mu with retaining wall built and vegetation planted	$35\times10^4m^3$	leveling already completed	Has been completed
	DK409+800 Borrow pit on left side	Already taken soil of $24\times10^4m^3$, covering an area of 130mu with retaining wall built and vegetation planted	$24\times10^4m^3$	leveling already completed	Has been completed

	DK469+050 Borrow pit	$30 \times 10^4 m^3$	$27 \times 10^4 m^3$	leveling already completed	
	DK505+900 (Left Line)	$20 \times 10^4 m^3$	$20 \times 10^4 m^3$		
	DK510+900 (Left Line)	$27 \times 10^4 m^3$	$16.2 \times 10^4 m^3$		
	DK511+250 (Left Line)	$27 \times 10^4 m^3$	$16.2 \times 10^4 m^3$		
	DK512+400 (Left Line)	$23 \times 10^4 m^3$	$13.8 \times 10^4 m^3$		
	DK526+300N North Side	Measures on environmental protection：re-cultivation and grass planting for virescence	$52.3 \times 10^4 m^3$		
	DK531+350 South Side	Measures on environmental protection：re-cultivation and grass planting for virescence	$33.4 \times 10^4 m^3$		
	DK534+000 South Side	Measures on environment protection：re-cultivation and grass planting for virescence	$34.6 \times 10^4 m^3$		
	DK535+200 South Side	Measures on environment protection：re-cultivation and grass planting for virescence	$38.4 \times 10^4 m^3$		
	DK536+900 South Side	Measures on environment protection：re-cultivation and grass planting for virescence	$27.6 \times 10^4 m^3$		
	DK540+560 South Side	Measures on environmental protection：re-cultivation and grass planting for virescence	$23.4 \times 10^4 m^3$		
	DK542+140 South Side	Measures on environment protection：re-cultivation and grass planting for virescence	$24.2 \times 10^4 m^3$		
	DK558+300	The amount of soil borrowing is designed to be $24(10^4 m^3)$. 120mu shall be dug to 5m. Re-cultivation and virescence.	$24 \times 10^4 m^3$	Already leveled off for reclaiming land and scattering grass seeds for virescence.	
	DK578+930 Borrow Pit	$35 \times 10^4 m^3$ (Re-cultivation)	$35 \times 10^4 m^3$	Under way	
	DK594+400 Borrow Pit	$30 \times 10^4 m^3$	$26.4 \times 10^4 m^3$		
	Borrow Pit on South Side of the Roadbed DK666+220	The amount of soil borrowing is $23.5 \times 10^4 m^3$, with the area of 35000 m^2. Measures on environment protection：re-cultivation and grass planting for virescence	$23.5 \times 10^4 m^3$		
	Borrow Pit on North Side of the Roadbed DK667+400	The amount of soil borrowing is $20.0 \times 10^4 m^3$, with the area of 28000 m^2. Measures on environment protection：re-cultivation and grass planting for virescence	$20.0 \times 10^4 m^3$		

	Spoil Ground at the Line South of DK425+250	$22.7\times10^4m^3$ Measures on environment protection：Leveled off for re-cultivation.	$22.7\times10^4m^3$		
	Spoil Ground at the Line North of DK429+400	$50\times10^4m^3$ Measures on environment protection：Leveled off for re-cultivation.	$46\times10^4m^3$		
	Spoil Ground at the Line South of DK429+450	$35.7\times10^4m^3$ Measures on environment protection：Leveled off for re-cultivation	$35.7\times10^4m^3$		
	Spoil Ground at the Line North of DK436+115	$25.6\times10^4m^3$ Measures on environment protection：Leveled off for re-cultivation.	$25.6\times10^4m^3$		
	Spoil Ground at the Line South of DK440+835	$39\times10^4m^3$ Measures on environment protection：Leveled off for re-cultivation.	$39\times10^4m^3$		
	Spoil Ground at the Line North of DK447+240	$21.2\times10^4m^3$ Measures on environment protection：Leveled off for re-cultivation.	$21.2\times10^4m^3$		
	Spoil Ground at the Line South of DK451+250	$25.2\times10^4m^3$ Measures on environment protection：Leveled off for re-cultivation.	$23.5\times10^4m^3$		
	Spoil Ground at the Line South of DK455+500	$20.5\times10^4m^3$ Measures on environment protection：Leveled off for re-cultivation.	$20.45\times10^4m^3$		
	At 350 m on the Left side of DK549+800	Already discarded waste slag of $25\times10^4m^3$ filling in the spoil ground of 5m.	$8\times10^4m^3$	Leveled off	Entrance to Hongjingzi Tunnel
	Spoil Ground of Inclined Well in Hongjingzi Tunnel	Already discarded waste slag of $35\times10^4m^3$ with retaining wall protected	$35\times10^4m^3$	Leveled off	
	DK572+800 Spoil Ground	$20\times10^4m^3$ (Construction Screen)	$20\times10^4m^3$	Not start construction	
	DK617 Spoil Ground	$20\times10^4m^3$	$17.07\times10^4m^3$		
	DK618 Spoil Ground	$25\times10^4m^3$	$20.5\times10^4m^3$		
	DK620 Spoil Ground	$20\times10^4m^3$	$17.6\times10^4m^3$		
	DK621 Spoil Ground	$20\times10^4m^3$	$16.33\times10^4m^3$		
Remarks	30 borrow pits, 21 spoil grounds, 1 mixing station, 1 grand bridge, 1 railway station and 1 ruin of the Great Wall were investigated this time. This investigation found that the borrow pits have been basically restored, part of them has developed				

	into farmland; the spoil grounds at the exit to Hongjingzi Tunnel and inclined well has been restored well; the mixing station at the exit to Hongjingzi Tunnel has been restored; the ruin of Great Wall of Ming dynasty at DK510+690 remains intact. Remaining problems: Since design of the retaining wall on the spoil ground at the exit to Hongjingzi Tunnel, the formal retaining wall has not been completed. For the individual borrow pits at DK479+300, the slop is so high, so need to be sloped.

Table 4-11: Implementation Details of Environment Protection Measures of ZQ-VI Bid Section

Project Contractor: No. 12 Bureau Group Co., Ltd. of CREC					
Supervisor: Beijing Railway Scientific Research Institute Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Yanchi Station	Garbage collecting basin	Sedimentation for treatment	4	Self-built for 45persons
	Niumaojing Fueling Station	Garbage collecting basin	Sedimentation for treatment	5	To be rent for 40 persons
	LDK590+570 Gaoshawo Town	Build garbage basin to classify garbage for collection	Sedimentation for treatment	2	To be rent for 25 persons
	Ningdong Jianengyuan	Garbage collecting basin	Sedimentation for treatment	Yes	To be rent for 140 persons
	Sub-project Department	Build garbage basin to classify garbage for collection	Sedimentation for treatment and percolation for discharge	6 pcs	To be rent for 80 persons
	No. 6 Project Department of Taiyuan – Zhongwei (Yinchuan) Railway	Build garbage basin to classify garbage for collection	Sedimentation for treatment and percolation for discharge	20 pcs	To be rent for 60 persons

Tunnel longer than 1000m	Name of tunnel	Mileage	Construction progress	Remarks
	Niumaojing Tunnel	LDK565+522~ LDK569+808	4286m dug, 4200m lining-built	

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks
	Si'ertan Grand Bridge	LDK541+840.65~LDK546+026.44	All pile foundations and pier bodies are completed	4185.79m
	Yangshitang Bridge	LDK552+929.08~LDK553+070.9	All pile foundations and pier bodies are completed	141.82m
	Sidunzi Bridge	LDK560+960.63~LDK561+171.15	All pile foundations and pier bodies are completed	146.32m
	Tianzhangliang Bridge	LDK560+960.63~LDK561+171.15	All pile foundations and pier bodies are completed	211.44m

	Tianjizhang Bridge	LDK560+960.63~LDK561+171.15	All pile foundations and pier bodies are completed	211.02m
	Machangjing 1# Bridge	LDK595+283.83~LDK595+512.85	All pile foundations and pier bodies are completed	229.02m
	Machangjing 2# Bridge	LDK595+676.5~LDK596+167.13	All pile foundations and pier bodies are completed	490.63m
	Baota Bridge	LDK615+242.17~LDK615+683.05	All pile foundations and pier bodies are completed	440.88m
	Shijingzigou Grand Bridge	LDK632+717.04 ~LDK 635+22.48	All abutments completed	2305.44m
	Dalipujing Grand Bridge	LDK635+931.50 ~LDK 637+092.36	All abutments completed	1160.86m
	Grand Bridge crossing Li-Yang Highway	LDK638+247.47 ~LDK 639+015.15	All abutments completed	767.68m
	Grand Bridge crossing Gu-Li Railway	LDK639+197.79 ~LDK 641+594.52	All abutments completed	2366.37m
	Guajinzigou Grand Bridge	LDK642+747.0 ~LDK 643+776.37	All abutments completed	1029.37m
	Huimingxiang Bridge	LDK629+245.0 ~LDK 629+498.99	All abutments completed	253.99m
	Shakougou Bridge	LDK644+902.90 ~LDK 645+310.83	All abutments completed	407.93m
	Grand Bridge crossing Yin-Ling highway	LDK664+603.99~LDK668+621.27	All completed	4017.28m
	Haojiagou Bridge	LDK647+785.13~LDK647+571.39	All completed	213.74m
	Dongwan Bridge	LDK650+605.2~LDK650+882.5	All completed	277.3m
	Lijiaquan Bridge	LDK652+210.50~LDK652+393.12	All completed	182.62m
	Zhuanzuigou Bridge	LDK653+058~LDK653+304.30	All completed	246.3m
	Xiongjiagou Bridge	LDK655+761~LDK656+102.96	All completed	341.16m
	Zhujiagou Bridge	LDK661+242.08~LDK661+389.081	All completed	147m
	Dawogou Bridge	LDK662+255.85~LDK662+438.66	All completed	182.81m
	Jiaonigou Grand Bridge	LDK658+629~LDK660+481.51	All completed	1851.78m
	Grand Bridge crossing Shi-Zhong Expressway	LDK677+943.73~LDK681+034.34	All completed	8324.6m

	Madahu Grand Bridge	LDK681+862.45~LDK684+366.96	All completed	2508.3m

Main borrow pit and spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	LDK548+300 Borrow pit	Already taken soil of $70\times10^4m^3$, with vegetation already restored	$70\times10^4m^3$	Part of landform already restored	Planted grass
	LDK549+350 Borrow pit	Already taken soil of $35\times10^4m^3$, with vegetation already restored	$35\times10^4m^3$	Part of landform already restored	
	LDK554+500 Borrow pit	Already taken soil of $85\times10^4m^3$, with vegetation already restored	$85\times10^4m^3$	Part of landform already restored	Planted grass
	LDK558+000 Borrow pit	Already taken soil of $68\times10^4m^3$, with vegetation already restored	$68\times10^4m^3$	Part of landform already restored	Planted grass
	LDK565+000 Spoil ground	Already discarded waste slag of $25\times10^4m^3$, with vegetation already restored	$25\times10^4m^3$	Leveled and sloped	
	LDK570+000 Spoil ground	Already discarded waste slag of $25\times10^4m^3$, with vegetation already restored	$25\times10^4m^3$	Leveled and sloped	
	LDK572+700 Spoil ground	Already discarded waste slag of $10\times10^4m^3$, with vegetation already restored	$10\times10^4m^3$	Leveled and sloped	
	LDK574+450 Borrow pit	Already taken soil of $30\times10^4m^3$, with vegetation already restored	$30\times10^4m^3$	Part of landform already restored	
	LDK577+700 Borrow pit	Already taken soil of $30\times10^4m^3$, with vegetation already restored	$30\times10^4m^3$	Part of landform already restored	
	LDK579+500 Borrow pit	$21\times10^4m^3$	$21\times10^4m^3$	Leveled and sloped	Planted glass
	LDK584+750 Borrow pit	$20\times10^4m^3$	$20\times10^4m^3$	Leveled and sloped	
	LDK589+200 Borrow pit	$14\times10^4m^3$	$14\times10^4m^3$	Leveled and sloped	

	LDK596+650 Borrow pit	$34\times10^4m^3$	$34\times10^4m^3$	Partially leveled	
	LDK599+700 Borrow pit	$15\times10^4m^3$	$15\times10^4m^3$	Leveled and sloped	
	LDK602+800 Borrow pit	$23\times10^4m^3$	$23\times10^4m^3$	Partially leveled	
	LDK609+700 Borrow pit	$11\times10^4m^3$	$11\times10^4m^3$	Partially leveled	Planted glass
	LDK612+380 Borrow pit	$15\times10^4m^3$	$15\times10^4m^3$	Leveled and sloped	
	LDK613+700 Borrow pit	$18\times10^4m^3$	$18\times10^4m^3$	Partially leveled	
	LDK614+700 Borrow pit	Already taken soil of $19\times10^4m^3$, with vegetation already restored	$19\times10^4m^3$	Leveled and sloped	
	LDK616+600 Borrow pit	$29\times10^4m^3$	$29\times10^4m^3$	Leveled and sloped	
	LDK588+300 Spoil ground	$12\times10^4m^3$	$12\times10^4m^3$	Leveled and sloped	
	LDK594+440 Spoil ground	$10\times10^4m^3$	$10\times10^4m^3$	Partially leveled	
	LDK606+900 Spoil ground	$10\times10^4m^3$	$10\times10^4m^3$	Partially leveled	
	LDK620+780 Dongwan Borrow pit	Already taken soil of $100\times10^4m^3$, with vegetation already restored	$100\times10^4m^3$	Leveled, most of them has been sloped	
	Reconstructed LDK626+400 Huiminxiang Spoil ground	$30\times10^4m^3$	$25\times10^4m^3$	Landform already restored	Planted grass
	Reconstructed LDK628+000 Huiminxiang Spoil ground	Discarded waste soil of $50\times10^4m^3$, with vegetation already restored	$50\times10^4m^3$	Landform already restored	Planted grass
	Reconstructed LDK629+800 Huiminxiang Spoil ground	$20\times10^4m^3$	$20\times10^4m^3$	Landform already restored	
	Reconstructed LDK630+800 Mapaoquan Spoil ground	Discarded waste soil of $85\times10^4m^3$, with vegetation already restored	$65\times10^4m^3$	Landform already restored	Utilize the land
	Reconstructed LDK639+200 Mapaoquan Spoil ground	$50\times10^4m^3$	$50\times10^4m^3$	Already restored	
	Reconstructed LDK642+200 Erdaogou Borrow pit	Discarded waste soil of $30\times10^4m^3$, with vegetation already restored	$30\times10^4m^3$	vegetation already restored	Planted grass

	LDK654+000 Spoil Ground	$11\times10^4m^3$	$11\times10^4m^3$	vegetation already restored	
	LDK649+030 Spoil ground	Discarded waste soil of $24\times10^4m^3$, with vegetation already restored	$24\times10^4m^3$	vegetation already restored	
	LDK646+700 Spoil ground	Discarded waste soil of $20\times10^4m^3$, with vegetation already restored	$21\times10^4m^3$	Leveled	
	LDK648+500 Spoil ground	Discarded waste soil of $36\times10^4m^3$, with vegetation already restored	$36\times10^4m^3$	Leveled	
	LDK663+500 Borrow pit	Already taken soil of $60\times10^4m^3$, with vegetation already restored	$60\times10^4m^3$	Leveled and sloped	
	Huangyangtan Borrow pit	Already taken soil of $240\times10^4m^3$	$180\times10^4m^3$	The soil supplier has restored to supply the soil.	Buying soil for the commercial purpose
Remarks	22 construction sites including borrow pits and spoil grounds were investigated this time. This investigation found that Paomakang Village Spoil Ground has been utilized by the local authority; the surrounding regions of Niumaojing Tunnel has been leveled; the original mixing stations and construction camps have been leveled, and some trees have been planted on part of construction sites; most of the borrow pits and spoil grounds have been restored; the restoring difficulty of other borrow pits and spoil grounds is not great. Yanchi Railway Station and Lingwu Railway Station are is in the construction of station buildings.				

Table 4-12: Implementation Details of Environment Protection Measures of ZQ-VII Bid Section

Project Contractor: No. 21 Bureau Group Co., Ltd. of CREC					
Supervisor: Jinan Shunda Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Xingzhou North Road, Yinchuan Railway Station (No. 1 Project Department)	Existing facilities in the building; the garbage will be collected for urban centralized treatment	Discharged into the urban facilities	Already set up environment protection propaganda blackboard	To be rent for 30 persons
	Grain Depot of Yuding Township of Zhongning County (No. 2 Project Department)	Garbage is periodically transported to appointed local garbage station	Already built septic tank but no urban drainage system	Already set up environment protection propaganda blackboard	To be rent for 30 persons

	Liujiawan Village of Xindian Township of Suide County (No. 3 Project Department)	Already set up garbage basin for a periodic treatment and domestic garbage is for centralized burying	Sedimentation basin is set up on construction camp and wastewater is to be discharged after sedimentation	Already set up environment protection propaganda blackboard	To be rent for 30 persons
	Liujiawan Village of Xindian Township of Suide County (4# inclined well)	Already set up garbage basin for a periodic treatment and domestic garbage is for centralized burying	Sedimentation basin is set up on construction camp and wastewater is to be discharged after sedimentation	Already set up environment protection propaganda blackboard	Self-building construction camp for 80 persons
	Liujiawan Village of Xindian Township of Suide County (Grand Bridge team)	Already set up garbage basin for a periodic treatment and domestic garbage is for centralized burying	Sedimentation basin is set up on construction camp and wastewater is to be discharged after sedimentation	Already set up environment protection propaganda blackboard	Self-building construction camp for 60 persons
	Liaoyazui Village of Xindian Township of Suide County (3# inclined well)	Already set up garbage basin for a periodic treatment and domestic garbage is for centralized burying	Sedimentation basin is set up on construction camp and wastewater is to be discharged after sedimentation	Already set up environment protection propaganda blackboard	Self-built for 65 persons

	Name of tunnel	Mileage	Construction progress	Remarks
Tunnel longer than 1000m	Suide Tunnel (exit section)	DK254+385~DK259 + 300	Converted into 5,085m of finished tunnel	Discarded slag used for leveling of construction camps of 3# and 4# inclined wells as source of broken stone

	Name	Mileage	Construction progress	Remarks
Grand bridge, great bridge	Gaoganliang Bridge	DK694+825.01	converted into 409 linear meters of finished bridge	Waste slag is discarded onto the wasteland nearby DK693+600 (original dumping ground), the construction work of foundation piles and pile shafts as well as bridge girder erecting have been finished.
	Shi-Zhong Expressway Grand Bridge	DK697+ 043.37	converted into 1316 linear meters of finished bridge	
	Longkenggou Grand Bridge	DK698+411.97	converted into 670 linear meters of finished bridge	
	Hongshanzui Bridge	DK700+781.55	converted into 308 linear meters of finished bridge	
	Qixingqu Bridge	DK701+743.71	converted into 148 linear meters of finished bridge	

	Grand Bridge crossing Bao-Zhong Railway	BLDK667+383.22-BLDK668+039.33	converted into 537.62 linear meters of finished bridge		Drying for secondary utilization
	Suide Wulidian Wuding River Grand Bridge	DK259 + 380~DK261+438	converted into 2,066 linear meters of finished bridge		Waste slag used for the backfilling of roadbed pit.
Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	Zhongning East Station near DK693-DK694 (south)	Borrow pit is nearby Zhongning east station, from where about $10.66\times10^4m^2$ (160 mu) of soil is taken.	Completed about $65\times10^4m^3$	Flattening side slope with the bottom surface of pit leveling	
	Zhongningdongducao near DK693-DK694 (south)	$9.33\times10^4m^2$ (140 mu)	$55\times10^4m^3$	Flattening side slope with the top surface leveling	
	Spoil Ground at the North to Zhongning East Railway Station	$10\times10^4m^2$ (150 mu)	$70\times10^4m^3$	Flattening side slope with the surface leveling	Developed as Auto City by the local authority.
	Yongxing Lucaowan Borrow pit	Already taken soil of $10\times10^4m^3$ covering $2.5\times10^4m^3$, deepening 4m	$10\times10^4m^3$	Leveling and rolling with slope trimmed	The roadbed Huangyangwan Station
	Jinsha Borrow pit	Already taken soil of $5.6\times10^4m^3$	$70\times10^4m^3$	Leveling and rolling with side slope trimmed	
	Mengjiawan Borrow pit of Yingshuiqiao	$20\times10^4m^3$ covering $1.2\times10^4m^3$,about 13m deep	$9.5\times10^4m^3$	Leveling and rolling with side slope trimmed	The roadbed Yingshuiqiao Station

	Spoil ground of Huangyangwan Tunnel	Spoil ground covering 3,1000m^2, filling height 4m	Already dug $6\times10^4m^3$ of waste slag	Retaining wall has been set up along the side slope with rolling the earth covered on the top. Intercepting ditch is set at the top of spoil and drainage system shall be prepared.	Discarded slag is used mainly for backfilling of frontal roadbed of entrance section of tunnel and leveling of construction site
	Beishan Spoil ground of Yuding Village	Spoil ground covering $4.2\times10^4m^2$, filling height 5m	$16.5\times10^4m^3$	Retaining wall has been set up along the side slope with rolling the earth covered on the top.	
	Suide Tunnel 3# Inclined well spoil ground DK256+400	Spoil ground covering $30.9\times10^4m^3$, filling height 1.27m	$30.9\times10^4m^3$	Temporary protection	Gravel used by the Local
	4# Inclined well spoil ground (on the right of wellhead)	$33\times10^4m^3$ covering $1.93\times10^4m^2$	$33\times10^4m^3$	Temporary protection	Gravel used by the Local
	Spoil Ground at the exit to Suide Tunnel (within the gully)	$5.5\times10^4m^3$ covering $3.67\times10^4m^2$,	$5.5\times10^4m^3$	Used for flattening the yard	
Remarks	This investigation found that the Spoil Ground at the North to Zhongning East Railway Station has been developed by the local for initialization, and an Auto City is in construction; Yuding Village Beishan Spoil Ground and Suide Tunnel 4# Spoil Ground have been still used by the local civilians for processing stones, and the sites are in a mess, which makes a pressure on the post stage restoration.				

Table 4-13: Implementation Details of Environment Protection Measures of ZQ-VII2 Bid Section

Project Contractor: No. 19 Bureau Group Co., Ltd. of CREC					
Supervisor: Jinan Shunda Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Zhaojiapu Village of Mantangchuan Township of Suide County	There is garbage treatment basin and garbage is periodically treated.	Wastewater is discarded into drainage ditch, collector well and sedimentation basin for treatment	Yes	Self-built for 165 persons

	Dabaijiagou Village				Withdrawn
	Gaojiaya Village	There is garbage treatment basin and garbage is periodically treated.	Wastewater is discarded into drainage ditch, collector well and sedimentation basin for treatment	Yes	Self-built for 120 persons

Tunnel longer than 1000m	Name of tunnel	Mileage	Construction progress	Remarks
	Suide Tunnel (Entrance section)	DK247+280~DK254 + 300	6081m dug and 5178.6m lining-built	

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks

Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	Spoil ground at entrance	Already discarded waste slag of $30\times10^4m^3$ with retaining wall built and grasses planted for virescence	Completed about $34.05\times10^4m^3$	Waste slag is leveled and rolled once after it is discarded	The design of protection to be approved
	Spoil ground for 1# inclined well	Already discarded waste slag of $20\times10^4m^3$ with retaining wall built and grasses planted for virescence	Completed $23.7\times10^4m^3$	Waste slag is leveled and rolled once after it is discarded	The design of protection to be approved
	Spoil ground of 2# inclined well	Already discarded waste slag of $30\times10^4m^3$ with retaining wall built and grasses planted for virescence	Completed $55.65\times10^4m^3$	Already built retaining wall at the Entrance	

Remarks	This time, we investigated the entrance to Suide Tunnel and the spoil grounds at 0#, 1# and 2# inclined wells. This investigation found that the tunnel has been opened; a common problem exist on the spoil grounds at the entrance of tunnel and 1# and 2# inclined wells, which is that the original spoil ground is basically leveled while utilized by local crushing mill. The sites are in a mess, so should be handed over ASAP.

Table 4-14: Implementation Details of Environment Protection Measures of SJS-I Bid Section

Project Contractor: No. 16 Bureau Group Co., Ltd. of CREC					
Supervisor: Beijing Ruite Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks

	Miaojiaping Town of Zizhou County	Collected for outward transportation	Treated in septic tank	Yes	To be rent for 100 persons
	Dongjiawan Town of Zizhou County	Collected for outward transportation	Treated in septic tank	Yes	To be rent for 100 persons
	Wulidian of Suide county	Collected for outward transportation	Treated in septic tank	Yes	To be rent for 100 persons
	Shijiawan town of Suide County	Collected for outward transportation	Treated in septic tank	Yes	To be rent for 60 persons
	1# Mixing Station	Setting on fire collectively in the waste pit	Treated in settlement tank	Yes	To be rent for 50 persons
	2# Mixing Station	Setting on fire collectively in the waste pit	Treated in settlement tank	Yes	To be rent for 60 persons
	3# Mixing Station	Setting on fire collectively in the waste pit	Treated in settlement tank	Yes	To be rent for 60 persons

	Name of tunnel	Mileage	Construction progress	Remarks
Tunnel longer than 1000m	Baijiashan tunnel	DK266+401~DK271+721	Has been completed	
	Miaojiaping 1# Tunnel	DK279+701~DK281+360	Has been completed	
	Miaojiaping 2# Tunnel	DK282+030~DK284+230	Has been completed	

	Name	Mileage	Construction progress	Remarks
Grand bridge, great bridge	Wulidian Grand Bridge	GK337+446.92~GK338+242.58	Hasn't erected the bridge girder	
	Ershilipu Grand Bridge	DK263+596.5~DK264+453.7	Has been basically completed	Waited for the contractor of Baotou-Xi'an Railway to dismantle
	Jizouxiankua Grand Bridge	JZK0+271.57~JZK0+897.75	Hasn't erected the bridge girder	
	Dingjiagou Grand Bridge	DK264+810.7~DK266+278.2	Has been completed	
	Shijiawan Grand Bridge	DK271+995.18~DK272+810.65	Has been completed	
	Yejiaping Grand Bridge	DK273+456.54~DK275+231.45	Has been completed	
	Dongjiawan Grand Bridge	DK275+715.54~DK279+700	Has been completed	
	Miaojiaping Grand Bridge	DK281+352.13~DK282+019.85	Has been completed	

Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	Spoil ground at entrance of Baijiashan Tunnel	Collected for outward transportation	19 $\times 10^4 m^3$	Completed	For local reutilization
	Spoil ground at exit of Baijiashan Tunnel	Already discarded waste slag of $20 \times 10^4 m^3$, with retaining wall built for protection and for re-cultivation	17 $\times 10^4 m^3$	Partially completed	
	1# spoil ground of Miaojiaping Tunnel	Already discarded waste slag of $20 \times 10^4 m^3$, with retaining wall built for protection and for re-cultivation	15 $\times 10^4 m^3$	Completed	
	Spoil ground at 2# entrance of Miaojiaping Tunnel	Already discarded waste slag of $20 \times 10^4 m^3$, with retaining wall built for protection and for re-cultivation	14 $\times 10^4 m^3$	Not carried out	Under secondary transportation
	Spoil Ground at 2# exit of Miaojiaping Tunnel	Retaining wall is built for protection and it is restored for re-cultivation	18 $\times 10^4 m^3$	Completed	
	Dingjiagou Station Yard Spoil Gound	Retaining wall and flood discharge channel are built for protection and it is restored for re-cultivation	156 $\times 10^4 m^3$	has not constructed	is discarding waste slag
Remarks	The spoil grounds at the entrance and exit to Miaojiaping 1# Tunnel, spoil ground at the enrance to 2# Tunnel and the borrow pits at Xujiaping and Shijiawan were investigated this time. Baijiazhuang 2# Inclined Well Spoil Ground, Dingjiagou Spoil Ground and the spoil ground at the exit to Baijiashan Tunnel has been restored well.				

Table 4-15: Implementation Details of Environment Protection Measures of SJS-II Bid Section

Project Contractor: No. 17 Bureau Group Co., Ltd. of CREC					
Supervisor: Urumchi Railway Construction Supervision Consultation Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Yaojiabian Village	Already set up garbage basin for periodic treatment	Wastewater is discharged into existing drainage system	Yes	To be rent for 55 persons

	Gaoqu Village	Already set up garbage basin for periodic treatment	Wastewater is discharged into existing drainage system	Yes	Self-built for 8 persons
	Niujiagou Village	Already set up garbage basin for periodic treatment	Wastewater is discharged into existing drainage system	Yes	Self-built for 32 persons
	Macha Township	Already set up garbage basin for periodic treatment	Wastewater is discharged into existing drainage system	Yes	To be rent for 28 persons
	Matigou Town	Already set up garbage basin for periodic treatment	Wastewater is discharged into existing drainage system	Yes	Self-built for 37 persons
	Zhoujiajian Town	Already set up garbage basin for periodic treatment	Wastewater is discharged into existing drainage system	Yes	Self-built for 38 persons

	Name of tunnel	Mileage	Construction progress	Remarks
Tunnel longer than 1000m	Diujiushan Tunnel 3122m	DK284+330~DK287+431	Already dug 3,122m and lining-built 3,122m	
	Zhangjiazhai tunnel 2266m	DK287+520~DK289+796	Already dug 2266m and lining-built 2,266m	

	Name	Mileage	Construction progress	Remarks
Grand bridge, great bridge	Zizhou Dali River Grand Bridge	DK291+223.15 2867.4m	All completed	
	Lijiagua Dali River Grand Bridge	DK295+114.84 2794.2m	All completed	
	Matigou Dali River Grand Bridge	DK299+520.35 2529.4m	Completed 1920 linear meters	
	Xunjiansi Dali River Grand Bridge	DK302+744.62 3051.7m	All completed	
	Shuangmiaowan Dali River Grand Bridge	DK307＋614.8 1059.89m	All completed	
	Shizhuang Dali River Bridge	DK309+847.86 470.12m	All completed	
	Yangzhuang Dali River Grand Bridge	DK310+870.58 832.38m	All completed	

	Zhaochangcun Dali River Grand Bridge	DK314+911.79 4147.8m	All completed	
	Fengqu Bridge	DK317+597.2 279.6m	All completed	Not started for construction
	Majiagoucha Dali River Grand Bridge	DK319+695.68 2902m	Completed 2,872 linear meters	
	Jiaochangping Dali River Grand Bridge	DK323+129.29 1154.5m	Completed 1019 linear meters	
	Jiaochangping 1# Bridge	DK324+970.48 211.15m	All completed	
	Jiaochangping 2# Bridge	DK325+535.03 172.72m	Completed 152.72 linear meters	
	Jiaochangping 3# Bridge	DK326+263.39 340.72m	All completed	
	Qilingou Bridge	DK327+555.4 342.5m	All completed	

Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	DK283+810 left spoil ground	Already discarded waste slag of $19\times10^4m^3$, occupied a land of 40mu, with retaining wall built for protection and drainage ditch built	$19\times10^4m^3$	Completed	Discarded slag from entrance of Diujiushan tunnel
	DK285+520 left spoil ground	Already discarded waste slag of $14\times10^4m^3$, occupied a land of 45mu, with retaining wall built for protection	$14\times10^4m^3$	Partially completed	Discarded slag from open-cut hole of Diujiushan tunnel

	DK287+640 right spoil ground	Already discarded waste slag of $40\times10^4m^3$, occupied a land of 98mu, with retaining wall built for protection and drainage ditch built	$40\times10^4m^3$	Completed	Discarded slag from exit of Diujiushan tunnel and entrance of Zhangjiazhai Tunnel
	DK289+760 right spoil ground	Already discarded waste slag of $22\times10^4m^3$, occupied a land of 49mu, with retaining wall built for protection and drainage ditch built	$22\times10^4m^3$	Completed	Discarded slag from exit of Zhangjiazhai Tunnel
	DK298+900 Right borrow pit	Already taken soil of $12\times10^4m^3$, occupied a land of 30mu and already leveled for vegetation	$12\times10^4m^3$	Completed	Backfilling roadbed of Mati ditch
	DK304+820 right spoil ground	Already discarded waste slag of $19\times10^4m^3$, occupied a land of 56mu, with retaining wall built for protection and drainage ditch built	$18.5\times10^4m^3$	Retaining wall completed	Discarded slag from Duanjia Tunnel
	DK310+900 Right borrow pit	Already taken soil of $18.5\times10^4m^3$, occupied a land of 28.6mu and already leveled for vegetation	$19\times10^4m^3$	It will be executed after soil-borrowing work is finished	Backfilling roadbed of Shuangmiaowan

	DK313+260 right spoil ground	Already discarded waste slag of $22\times10^4m^3$, occupied a land of 33.7mu, with retaining wall built for protection and drainage ditch built	$22\times10^4m^3$	Not carried out	Discarded slag from Zhoujiajian Tunnel
Remarks	The investigation on the spoil grounds at the entrance to Jiushan Tunnel, Jiushan Tunnel Opencut Hole, at the exit to Jiushan Tunnel, at the exit to Zhangjiazhai Tunnel and at the entrance to Duanjiawan 2# Tunnel found that the retaining walls on the spoil grounds iushan Tunnel Opencut Hole and at the exit to Jiushan Tunnel have been completed, the restoration work of the spoil ground at the exit to Zhangjiazhai Tunnel has been completed, and other spoil grounds need to be still restored.				

Table 4-16: Implementation Details of Environment Protection Measures of SJS-III Bid Section

Project Contractor: No. 2 Bureau Group Co., Ltd. of CREC					
Supervisor: Tianjin Xinyatai Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Northern Livestock Husbandry Company in Yangqiaopan Town of Jinbian County	Already set up garbage basin for periodic outward transportation for treatment	Discharged into the existing facilities	In progress	To be rent for 35 persons
	Experimental sand harnessing station in Yangqiaopan town of Jinbian County	Periodically treated after being collected	Discharged into the existing facilities	No	To be rent for 40 persons
	1# mixing station	Periodically treated after being collected	Sedimentation tank is built and wastewater is discharged after treatment.	No	Self-building construction camp for 40 persons
	2# mixing station	Periodically treated after being collected	Sedimentation tank is built and wastewater is discharged after treatment.	No	Self-building construction camp for 20 persons
	3# mixing station	Periodically treated after being collected	Sedimentation tank is built and wastewater is discharged after treatment.	No	Self-building construction camp for 30 persons

Tunnel longer than 1000m	Name of tunnel	Mileage	Construction progress	Remarks

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks
	Grand Bridge crossing Hekoumiao Reservoir	DK373+720.36~DK377+279.26	Completed	
	Luhe Grand Bridge	DK383+490.32~DK385+000	Completed	
	Grand Bridge crossing Yu-Jing Expressway	DK398+381.24~DK400+334	Completed	

	Jiajiawan Bridge	DK372+942.63~DK373+246.24	Completed		
	Baoqu Bridge	DK368+863.9~DK369+198.77	Completed		
Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	On the right of DK366+350	Already taken soil of $39\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the right of DK369+400	Already taken soil of $11\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the right of DK378+500	Already taken soil of $4\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the right of DK378+750	Already taken soil of $4\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the right of DK379+250	Already taken soil of $30\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the right of DK379+600	Already taken soil of $20\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the left of DK380+000	Already taken soil of $25\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the left of DK383+100	Already taken soil of $30\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the right of DK384+015	Already taken soil of $17\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the right of DK386+500	Already taken soil of $30\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the right of DK391+000	Already taken soil of $21\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	On the right of DK391+100	Already taken soil of $25\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	Borrow pit on the right side of DK393＋000	Already taken soil of $25\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	Borrow pit on the right side of DK394＋600	Already taken soil of $35\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	Borrow pit on the right side of DK400+300	Already taken soil of $35\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	Borrow pit on the right side of DK401+000	Already taken soil of $35\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	Borrow pit on the right side of DK404+500	Already taken soil of $35\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	Borrow pit on the right side of DK405+800	Already taken soil of $35\times10^4m^3$ and leveled off	Already completed	Already leveled off	
	Borrow pit on the right side of DK365＋750	Already discarded waste slag of $26\times10^4m^3$ and with slope protected and re-cultivated	Already completed	Already leveled off	Has planted the farm crop

	Spoil ground on the right side of DK373＋250	Already discarded waste slag of $8\times10^4m^3$ and with slope protected and re-cultivated	Already completed	Already leveled off	Partially restored the vegetation
	Spoil ground on the right side of DK374＋830	Already discarded waste slag of $20\times10^4m^3$ and with slope protected and re-cultivated	Already completed	Already leveled off	Partially restored the vegetation
	Spoil ground on the left side of DK383＋400	Already discarded waste slag of $2.2\times10^4m^3$ and with slope protected and re-cultivated	Already completed	Leveling off of slope protection already completed	Has been utilized by the local government
	Spoil ground on the right side of DK398＋870	Already discarded waste slag of $1.8\times10^4m^3$ and with slope protected and re-cultivated	Already completed	Leveling off of slope protection already completed	Has been utilized by Southwest Company
Remarks	This investigation found that as of October 2009, the borrow pits and spoil grounds along the whole section have been handed over to the local state land authority; the bridge reconstruction of the ruin of Great Wall of Ming dynasty is in construction.				

Table 4-17: Implementation Details of Environment Protection Measures of SJS-IV Bid Section

Project Contractor: No. 1 Bureau Group Co., Ltd. of CREC					
Supervisor: Urumchi Railway Construction Supervision Consultation Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Wayaoqu Village of Weijialou Township	Already built garbage basin and periodically buried garbage	Already built sedimentation tank for sedimentation and purification before discharging	Yes	Self-built for 40 persons
	Boshuqu Village	Already built garbage basin and periodically buried garbage	Already built sedimentation tank for sedimentation and purification before discharging	Yes	Self-built for 80 persons
	Wajiamao Village of Weijialou Township	Already built garbage basin and periodically buried garbage	Already built sedimentation tank for sedimentation and purification before discharging	Yes	Self-built for180 persons
	Yangjialou Village of Weijialou Township	Already built garbage basin and periodically buried garbage	Already built sedimentation tank for sedimentation and purification before discharging	Yes	Self-built for 125 persons

	Gangcheng Village of Shuang cheng Township	Already built garbage basin and periodically buried garbage	Already built sedimentation tank for sedimentation and purification before discharging	Yes	Self-built for 50 persons

Tunnel longer than 1000m	Name of tunnel	Mileage	Construction progress	Remarks
	Hengshan Tunnel	DK333+265~DK344+713	11,159m already dug, and 10919m already lining-built	

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks
	Weijialou grand bridge across Mayi River	DK332+957.35, 550.4m long in total	Completed 540.6m of bridge	
	Gangcheng bridge across Mayi River	DK344+826.11, 209.37m long in total	Completed 204.5m of bridge	

Main borrow pit / spoil ground	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
	Spoil ground at entrance of Hengshan Tunnel	Already discarded waste slag of $39\times10^4m^3$, with retaining wall built for protection	$39\times10^4m^3$	Masonry completed	
	Spoil ground of 1# inclined well of Hengshan Tunnel	Already discarded waste slag of $44.5\times10^4m^3$, with retaining wall built for protection	$44.5\times10^4m^3$	not lining-built	
	Spoil ground of 2# inclined well of Hengshan Tunnel	Already discarded waste slag of $56.5\times10^4m^3$, with retaining wall built for protection	$52.5\times10^4m^3$	Retaining wall not in construction	
	Spoil ground of 3# inclined well of Hengshan Tunnel	Already discarded waste slag of $74.0\times10^4m^3$, with retaining wall built for protection	$70.4\times10^4m^3$	Retaining wall not in construction	
	Spoil ground at exit of Hengshan Tunnel	Already discarded waste slag of $22.8\times10^4m^3$, with retaining wall built for protection	$22.8\times10^4m^3$	Retaining wall not in construction	
	Spoil ground of Dalumao tunnel	Already discarded waste slag of $8.6\times10^4m^3$, with retaining wall built for protection	$8.6\times10^4m^3$	Masonry completed	
	Spoil ground of Weijialou 1#/2# Tunnel	Already discarded waste slag of $10.5\times10^4m^3$, with retaining wall built for protection	$10.5\times10^4m^3$	Retaining wall not in construction	
	Spoil ground of Weijialou 2# and 3# Tunnels	Already discarded waste slag of $13.1\times10^4m^3$, with retaining wall built for protection	$13.1\times10^4m^3$	Retaining wall not in construction	

Remarks	The investigation on the spoil grounds at the exit to Hengshan Tunnel, at the entrance to Hengshan Tunnel, Hengshan Tunnel 1# Inclined Well, at the entrance to Weijialou 3# Tunnel and at the entrance to Weijialou 2# Tunnel found that the retaining wall along the side of river channel at the entrance to Hengshan Tunnel has been built; the restoration work of most of spoil grounds has not been completed due to the un-implementation of restoration design.

Table 4-18: Implementation Details of Environment Protection Measures of SJS-V Bid Section

Project Contractor: China Railway Tunnel Bureau Corporation					
Supervisor: Tianjin Xinyatai Supervision Company					
Construction camp	Place	Garbage treatment measures	Wastewater treatment measures	Is there environment protection propaganda blackboard	Remarks
	Entrance of Gangcdheng Tunnel (DK345+430)	Already built garbage basin and periodically buried garbage	Centralized sedimentation for treatment and discharging	Yes	Self-built for 60 persons
	Entrance of Xingwangmao Tunnel (DK350+100)	Already built garbage basin and periodically buried garbage	Centralized sedimentation for treatment and discharging	Yes	Self-built for 190 persons
	Exit of Gangcheng Tunnel (DK350+005)	Already built garbage basin and periodically buried garbage	Centralized sedimentation for treatment and discharging	Yes	Self-built for 222 persons
	2# inclined well of Xingwangmao (DK354+600)	Already built garbage basin and periodically buried garbage	Centralized sedimentation for treatment and discharging	Yes	Self-built for 5 persons
	3# inclined well of Xingwangmao (DK356+550)	Already built garbage basin and periodically buried garbage	Centralized sedimentation for treatment and discharging	Yes	Self-built for 260 persons
	Exit of Xingwangmao Tunnel (DK361+170)	Already built garbage basin and periodically buried garbage	Centralized sedimentation for treatment and discharging	Yes	Self-built for 160 persons

Tunnel longer than 1000m	Name of tunnel	Mileage	Construction progress	Remarks
	Xingwangmao Tunnel (11070m)	DK350+115~DK361+170	Already completed	
	Gangcheng Tunnel (4575m)	DK345+430~DK350+005	Already completed	

Grand bridge, great bridge	Name	Mileage	Construction progress	Remarks

	Position mileage	Designed soil-borrowing and spoiling quantity and measures	Progress	Execution of measures	Remarks
Main borrow pit / spoil ground	Spoil ground at exit of Xingwangmao Tunnel	Already discarded waste slag of $55\times10^4m^3$, with retaining wall built for protection	$55\times10^4m^3$	Permanent protection completed	
	1# spoil ground of Xingwangmao Tunnel	Already discarded waste slag of $54.6\times10^4m^3$, with retaining wall built for protection	$54.6\times10^4m^3$	Permanent protection completed	
	2# spoil ground of Xingwangmao Tunnel	Already discarded waste slag of $41\times10^4m^3$, with retaining wall built for protection	$41\times10^4m^3$	Permanent protection completed	
	3# spoil ground of Xingwangmao Tunnel	Already discarded waste slag of $50\times10^4m^3$, with retaining wall built for protection	$50\times10^4m^3$	Permanent protection completed	
	Spoil grounds at exit of Xingwangmao Tunnel and entrance of Gangcheng tunnel	Already discarded waste slag of $60\times10^4m^3$, with retaining wall built for protection	$60\times10^4m^3$	Permanent protection completed	
	Spoil ground at entrance of Xingwangmao Tunnel	Already discarded waste slag of $50\times10^4m^3$, with retaining wall built for protection	$45\times10^4m^3$	Permanent protection completed	
	Spoil Ground longer than 1,100 m at the entrance to Gangcheng Tunnel	Already discarded waste slag of $5\times10^4m^3$, with retaining wall built for protection	$5\times10^4m^3$	Filled the original highway with pits borrowing from deep pits.	
Remarks	The investigation on the spoil grounds at the exit to Xingwangmao Tunnel, 3# Inclined Well, 2# Inclined Well, 1# Inclined Well and at the entrance to Xingwangmao Tunnel found that the retaining wall of waste slag has been completed; the individual surface has been basically leveled; the slopes on the individual spoil ground need to be trimmed; the restoration difficulty is not great. There was still a small mount of water gushing in the 3# inclined well at xingwangmao Tunnel,				

4.2. Conclusion

The construction for Taiyuan – Zhongwei (Yinchuan) Railway is approaching the end and the civil work engineering under the marked line at the whole line will be completed by the end of 2009. The restoration of the borrow pits/spoil grounds along the whole line has been improved markedly comparing with that of the first half of this year. In the special joint inspection organized by the Project Department of Taizhongyin company for the borrow pits/spoil grounds, there are total 205 sites were found, including 52 borrow pits and 153 spoil grounds at 17 sections. Of which, 61 sites are under the management of China Communications Construction Company Ltd. (CCCC), 42 sites under China State Construction ENGRG Corp.（CSCEC) and 21 sites under China Railway （CR）No. 12 Bureau Co., Ltd.) (ZQ-VI Bid). In addition, we also investigated the construction sites of 6 bridge girders and 4 railway stations. Through the joint inspection, we obtained the general situation of restoration at the

borrow pits/spoil grounds along the whole line. The environment and water protection work of the whole line is in satisfactory controllable condition.

4.2.1. About Borrow Pits/Spoil grounds

4.2.1.1. General Situation Borrow pits/Spoil grounds

According to the Situation Summary Table of the Borrow Pits and Spoil Grounds of Taiyuan – Zhongwei (Yinchuan) Railway reported by various bid sections in June 2009, the contractors were actually set up 302 borrow pits with borrowing soil of 4,977.9 × 10^4 m^3 and 300 spoil grounds with discarding waste slag of 4,774.1 × 10^4 m^3 along the whole line of Taiyuan – Zhongwei (Yinchuan) Railway.

4.2.1.2. Borrow Pits

Most borrowing pits of Taiyuan – Zhongwei (Yinchuan) Railway were located in the desert plain area in the west to Suide, Shaanxi Province and Ningxia. Up to now, the earth fetching work of 203 borrow pits along the whole line has been completed.

3 project departments of No. 2 Bureau Group Co., Ltd. of CREC have gone through the hand-over formalities for 22 borrow pits/spoil grounds with the local state land authority, signed the Agreement on the Land and Forest Land Reclamation as well as Vegetation Restoration of Temporary Land of Taiyuan – Zhongwei (Yinchuan) Railway and the Handover Certificate, and paid the corresponding charge in full.

1. DK383+100 borrow pit of No. 2 Bureau Group Co., Ltd. of CREC has been recovered and handed over to the local government for implementation.

90% of 71 borrow pits of No. 12 Bureau Group Co., Ltd. of CREC has restored, and the earth-fetching area was verified by the local state land authority, which is waited for handover.

2. The borrow pit to the right of DK528+100 of No. 12 Bureau Group Co., Ltd. of CREC has been recovered and remains to be handed over.

For 187 borrow pits of CSCEC, most of them has been restored and had the qualification for handover.

3. DK481+300 borrow pit of CSCEC has been recovered and remains to be handed over.

From 52 borrow pits of this investigation, we can find that the slopes of only individual borrow pits need to be trimmed; the workload and difficulty for restoration are not great, and the restoration work will be completed before completion next year and the handover work will be finished with the local government.

The actual number of borrowed pits wet along the whole line is much more than of the preliminary design (59 borrow pits), but the difference of the amount of earth borrowed between the actual construction and preliminary design (4,659.63 × 10^4 m^3) is very little. Investigation found that, for the borrow pits of Xhaanxi Province along this railway line, the water height of some regions is very height, and the underground rock in the borrow bits is very hard. The average earth borrowed of these borrow pits is less than 2 m, which is one reasons why so many borrow pits were set.

The common problem existing in the borrow pits is, except for the borrow pits that can be re-cultivated, the progress of surface vegetation restoration in borrow pits is very slow. One of reasons is that the contractor paid no attention on the collection of surface soil before borrowing earth, another reason is the surface soil of borrow pits located in desert areas is very thin which make it difficulty to be collected. In addition, the annual rainfall in the Northwest is very low, which leads to the slow vegetation restoration progress on the surface soil of borrow pits.

4.2.1.3. Spoil Grounds

The borrow pits/spoil grounds along the whole line of Taiyuan – Zhongwei (Yinchuan) Railway mainly concentrated in the jurisdictions under CCCC (149), CSCEC (43), No. 12 Bureau Group Co., Ltd. of CREC, and adjacent regions of various tunnels. Investigation found that, the spoil grounds with the piling height of no more than 5m located in desert regions in the west to Suide, Shaanxi Province, after stratified, sloped and leveled on the top, have been basically restored. For the spoil grounds located in the east to Suide, some part of them have been restored well or earthed up for reclaiming land or were ready to be re-cultivated; for the another part of them, the retaining protection and drainage design on spoil grounds are relatively backward, which is difficult to implement the principle of "discarding after retaining" and full restoration by the contractors.

(1). As the earth-rock construction of the whole line of Taiyuan – Zhongwei (Yinchuan) Railway approaches the end, the waste slag discarding work has been basically completed, and the restoration work of spoil grounds has been improved significantly, which have manifested themselves mainly in the following aspects:

● A quantity of spoil grounds have been restored, and the contractors should use the discarded earth for filling in the gully or building dam and soil-retaining dam, leveling for elimination, thus providing the civilians along the railway with a great deal of new valuable farmland and useful land.

4. The spoil ground in East Zhongning Station of No. 21 Bureau Group Co., Ltd. of CREC has been developed for the Auto City by the local government. At present, the Auto City has come into existence.
5. 2# Spoil Ground covering appr. 65 mu in Paomaquan Village of No. 12 Bureau Group Co., Ltd. of CREC has been for parking lot.
6. DK383+400 Spoil Ground of No. 2 Bureau Group Co., Ltd. of CREC has been developed and built into road.
7. The spoil ground at the exit to Baijiashan Tunnel of No. 16 Bureau Group Co., Ltd. of CREC covers the area of 80 mu, and the retaining wall and drainage channels has been built for it.
8. The spoil ground at Chaoyangpo 1# Tunnel of CCCC has the smooth surface, and has been leveled off. The retaining wall has been built for it, and total area is 25.5 mu.
9. The spoil ground at the exit to Hongjingzi Tunnel of CSCEC has been developed into reclaiming land by filling and leveling the gully with the length of 200 m.

● A quantity of spoil grounds have been basically leveled and retained properly, or the soil-retaining dams have been built, which have the basis for virescence and reclamation.

10. The spoil ground to the right of DK627+000 of No. 12 Bureau Group Co., Ltd. of CREC has vegetated vigorously.
11. The spoil ground at the exit to Niumaojing Tunnel of No. 12 Bureau Group Co., Ltd. of CREC has been leveled, and the trees have planted on the part of it.
12. DK619+000 spoil ground of CSCEC has been leveled and covered.
13. The spoil ground of 650,000 m^3 at the entrance to Xingwangmao Tunnel of CTG has been layered and sloped, and 80 kg of clover seed has been planted on the surface of this spoil ground, and now it is a carpet of green grass.
14. For spoil ground at the inclined well in Hongjingzi of CSCEC, the retaining wall has been built.
15. The spoil ground at 1# Xingwangmao Tunnel of CTG has been layered and sloped, and the retaining wall has been built.
16. The soil-retaining dam at Xialiujia Tunnel 1# Spoil Ground of CCCC
17. For the spoil grounds at Xiaoxiangzhai 1# and 2# Tunnel, the drainage channels have been dig, and the surface is level.
18. The spoil ground at the entrance to Wubao Tunnel of No. 16 Bureau Group Co., Ltd. of CREC has been layered and sloped.
19. The retaining wall along the construction detour at the spoil ground at the exit to Lishi Tunnel of China Coal No.3 Construction (group) Corporation Ltd.

20. The spoil ground at the exit to Liangshan Tunnel of No. 3 Bureau Group Co., Ltd. of CREC has been leveled, and the construction of retaining wall has been completed.

Investigation found that although the restoration work of many spoil grounds has been completed finally, but the difficulty is not great. It is estimated that the proportion of restoration work completed of the whole line will be increased markedly.

(2). Spoil grounds with the delayed renovating work to be focused on

Girder Casting Yard of No. 9 Project Department of CCCC discarded the waste slag into the stream channel of Beichuan River (Photo 21). Taiyuan – Zhongwei (Yinchuan) Railway Commanding Headquarter has required the contractor of CCCC to stop discarding, and remove the waste slag occupying the steam channel.

The spoil ground at Wucheng Tunnel of CCCC affected the spillway of reservoir (Photo 22). The procedures of occupied land in this spoil ground are not incomplete, and the waste slag has affected the cross-section of spillway. The water management supervisor has put forward the renovation requirements for many times, but the contractor did not change as yet. We suggested that CCCC organize to carry away the waste slag ASAP.

There was the great of restoration work in 3# Spoil Ground at Huotangzhai of CCCC (photo 23). The construction management of this spoil ground was imperfect, and the waste slag was discarded in a mess, which brought the difficulty to the later restoration.

(3). The spoil grounds at Yudingxiang Village of No. 21 Bureau Group Co., Ltd. of CREC and at the exit to Suideng Tunnel and 4# Inclined Well Spoil Ground of No. 19 Bureau Group Co., Ltd. of CREC has been still utilized by the civilians for stone mining, which affected the leveling and restoration of spoil grounds.

Investigation found that those spoil grounds without proper restoration mainly concentrated in CCCC. Apart from the delayed retaining protection design of part of spoil grounds, bad organization of construction is also a key reason. The contractor failed to combine the waste slag discarding with the latter restoration work, which brought the difficulty to the later restoration work and unnecessary duplication of effort. Therefore, Taiyuan – Zhongwei (Yinchuan) Railway Commanding Headquarter requires CCCC to renovate ASAP, and the renovation will be proved so fruitful early next year. For the issues that the local civilian utilized the spoil ground for stone mining, the joint inspection team put forward the suggestion that the contractor should define the deadline and responsibility of restoration work and go through the handover procedure ASAP. As for the waste slag occupying the steam channel, the commanding headquarter requires the contractor to actively negotiate with the local water resources authority. If the contractor fails to obtain the approval, the waste slag must be removed from the stream channel.

4.2.1.4 Problem Tracking of 2009 Interim Report

- The spoil ground on the hillside behind Jundu Village under the jurisdiction of CCCC is not the formal spoil ground. The total amount of discarded earth is appr. 27×10^4 m^3. At present, there is still appr. 10×10^4 m^3 of amount of waste slag that need to be carried away, so the contractor should continue to devote much of its attention (photo 26).
- The waste slag into the Sanchuan River discarded by Liujiashan Tunnel under CCCC has not been removed. It is said that the local civilian hope to reserve it as farmland and prevent it from carrying away. We have warned them that the setting of spoil ground into the stream channel must be approved by the relevant water resources authority, otherwise it must be removed.
- The issue that Tianshui River 3# Spoil Ground under No. 12 Bureau Group Co., Ltd. of CREC occupied the stream channel has been resolved, and the waste slag discarded into the stream channel has been removed to

outward of bridge piers. During the investigation, we cannot conduct an inspection due to the heavy snow.

4.2.2 Influence of Water Gush of Tunnels

Investigation found that the water gush of the entrance of Lüliangshan Tunnel contracted by No. 12 Bureau Group Co., Ltd. of CREC currently maintains at 100T/h, and less water gush and more entrance for No.2 incline well. At present, there are still three water teams (Tunnel Bureau and No. 12 Bureau) under construction blocking the water, quantity of water decreases to some extent. Taiyuan – Zhongwei (Yinchuan) Railway Commanding Headquarter will determine the final resolution according to the effect of blocking water and change of hydro-geological conditions. At present, through clean-water reservoir and pumping station, water is supplied to 1000 residents and livestock of the surrounding village such as Xiangyang Village, Potou Village.

As for the exit section of Lvliangshan Tunnel contracted by No. 3 Bureau Group Co., Ltd. of CREC, the total water yield of tunnel is appr. 180T/h, and water blocking operation is undergoing, the water acquired from self-provided well was delivered to villager by vehicle.

The water yield of Xingwangmao Tunnel contracted by Tunnel Bureau of CREC concentrated at the entrance and 3# inclined well, and there is no significant increase in the amount of discharging water as yet. The water yield of 2# inclined well has stopped. The original submerged farmland outward 2# inclined well has dried, which can restore to be farmed, and the trees are growing well.

4.2.3 Cultural relic protection

The ruin of Great Wall of Ming dynasty at the roadside along Hequan Town Line Dingbian County under CSCEC remains intact, and the roadbed construction has been completed (photo 27).

The design drawing for bridge reconstructed from road in the ruin of Great Wall of Ming dynasty at Yanger Village Jingbian County under No. 2 Bureau Group Co., Ltd. of CREC will be arrived in September 2009, and the construction of bridge has been completed. During the construction, No. 2 Bureau Group Co., Ltd. of CREC specially protected the ruin of Great Wall of Ming dynasty by using glass epoxy. During the investigation, we cannot conduct an inspection due to the heavy snow.

4.2.4 Beneficiary project to mass

The railway construction of TZY Railway has come to an end; each construction unit is summarizing the performance for such project. Through investigation, it is also found that there are a large number of cases of Beneficiary project to mass, and the general performance shall be specified in the final report in detail.

Photo 32: soil-retaining dam built for the local by China Railway Tunnel Bureau

5. Suggestion:

（1） The restoration agreement on Siertan Mixing Station located in Haba Lake Nature Reserve of No. 12 Bureau Group Co., Ltd. of CREC will be subject to the approval of competent authority of this nature reserve, and the agreement only signed between No. 12 Bureau Group Co., Ltd. of CREC and villagers should be regarded as invalid.

（2） The construction detour bridge on Yongning Yellow River Grand Bridge of No. 14 Bureau Group Co., Ltd. of CREC should be dismantled ASAP, and the construction equipment such as steel pipe in the stream channel must be cleaned thoroughly to ensure the smooth passage of the ice-jam flood of Yellow River next Spring (photo 29).

（3） If the construction is completed while the processing of stone on spoil grounds by local villager is still going on, the contractor fails to restore the slag sites timely, or if the local government request to restore the slag sites and deliver it to the local(for instance, Shaanxi Province), the contractor is suggested to negotiate with government authorities above town level, define the restoration liability, standard and date of spoil ground, sign

validated agreement, and hand it over as early as possible.

（4）For the temporary requisition of basic farmland, if, after the restoration, the nature of land use changes (for instance, it is developed as the land for development area), the unit occupying the land should go to the local state land authority to go through the procedure for approval of the nature of land use.