



Environmental Monitoring Report

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PRC: Guangxi Roads Development II Project

Prepared by: Communication Environmental Monitoring Center
Guangxi Zhuang Autonomous Region

For: Communication Infrastructure Management Bureau of Guangxi Zhuang
Autonomous Region

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Asian Development Bank

**Communication Environmental Monitoring Center
Of Guangxi Zhuang Autonomous Region**

MONITORING REPORT

(Annual Report in 2007)

Project Name: Environmental Monitoring in Construction Period of
Nanning (Tanluo) – Baise Highway


Entrusted by : Communication Infrastructure Management Bureau of
Guangxi Zhuang Autonomous Region

Category: Commission Monitoring

Date of Report: 11 Jan 2008

Communication Environmental Monitoring Center of
Guangxi Zhuang Autonomous Region (Sealed)

Instructions to Monitoring Report

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1. Source of Tasks and Aims of Environmental Monitoring

Comprising 3 phases – subgrade, road surface and traffic facilities construction phases, construction of Nanning (Tanluo) -- Baise Express Highway started on Jun. 16th, 2005 and was expected to complete within 36 months. Periodical monitoring will be conducted during each phase. In accordance with requirements in *Technical Service Contract for Environmental Monitoring of Nanning (Tanluo) – Baise Express Highway during Construction Period* as well as *Environmental Impact Assessment on Nanning (Tanluo) – Baise Express Highway*, the Station monitored the ambient air and acoustic environment along the road from Dec., 2005 to Dec., 2007. This report represents the monitoring results of environmental quality during subgrade construction period from Jan. to Dec., 2007.

2. Location of Monitoring Points, Monitoring Frequency and Items

According to the requirements of *Environmental Impact Assessment on Nanning (Tanluo) – Baise Express Highway* and *Technical Service Contract for Environmental Monitoring of Nanning (Tanluo) – Baise Express Highway during Construction Period*, the monitoring points were set and monitoring work carried out as follows:

Monitoring of Ambient Air Quality

The monitoring was conducted to the residential areas or sensitive units (schools) in the vicinity of cement, asphalt and concrete mixing stations as well as the construction by-pass with TSP as the monitoring item. The frequency was once every one month and each time lasted 12 hours continuously.

On Jan. 12th, 2007, a monitoring point was set respectively at Dao'e Village (K59+650), Tiandie in Xin'an (K64+200) and Jiuji Village (K63+700) on contract section C4 as well as Guohua Junior Middle School (K81+500) on contract section C5.

On Feb. 2nd, 2007, a point was set respectively at Langwan Village (K15+600) on contract section C1, Longxiang School (K20+500) and Banze (K30+150) on contract section C2 as well as Naxv (K49+100) on contract section C3.

On Mar. 27th, 2007, it was set respectively at Hope Primary School in Nayin Sponsored by Military sub-command in Baise Prefecture (K166+700) and Xiangshui of Nayin Village (K166+800) on contract section C11, Dongyin Village (K175+100)

and Dormitory of Yin Hai Aluminium Co. (K181+200) on contract section C12.

On Apr. 23rd, 2007, it was set respectively at Wanjiang Village (K147+700), Xingwang (K158+200), Xingcheng Village (LK2+000) and Nalai (LK3+060) on contract section 10.

On May 25th, 2007, it was set respectively at Tunlan (K0+950), Na Xuepo (K2+600), Jiu Tiantang (K6+900) and Gong Jiaopo (K7+700) on contract section C1.

On Jun. 20th, 2007, it was set respectively at Na Min (K57+800), Dao'e Village (K59+650), Longju Village (K60+200) and Zhuangnei (K63+450) on contract section C4.

On Jul. 30th, it was set respectively at Zhuangnei (K63+450), Jiuji Village (K63+700) and Tiandie in Xin'an (K64+200) on contract section 4 as well as Guohua Junior Middle School (K81+500) on contract section C5.

On Aug. 27th, 2007, it was set respectively at Wanjiang Village (K147+700) and Xingwang (K158+200) on contract section 10, Xiangshui of Nayin Village (K166+800) on contract section C11 and Dongyin Village (K175+100) on contract section C12.

On Sep. 25th, 2007, it was set respectively at Langwan Village (K15+600), Longxiang School of Nanning (K20+500), Naxv (K49+100) and Lutuo Village (K50+200) on contract section C1.

On Oct. 27th, 2007, a monitoring point was set respectively at Na Min (K57+800), Dao'e Village (K59+650) and Tiandie in Xin'an (K64+200) on contract section C4 as well as Guohua Junior Middle School (K81+500) on contract section C5.

On Nov. 12th, 2007, a point was set respectively at Da Bu (K89+200) and Po Yan (K90+250) on contract section C6, Dormitory of Yin Hai Aluminium Co. (K181+200) and Jiangba of Jiangfeng Village (K182+400) on contract section C12.

On Dec. 18th, 2007, it was set respectively at Naxv (K49+100) and Lutuo Village (K50+200) on contract section C3, Namin (K57+800) and Dao'er Village (K59+650) on contract section C4..

Noise Monitoring

After on-site survey on the sensitive points along the road, all of the residential areas

and sensitive units (schools and hospitals) within 50m were selected as monitoring objects in accordance with the requirements of *Technical Service Contract for Environmental Monitoring of Nanning (Tanluo) – Baise Express Highway during Construction Period*. Every month a noise monitoring point was set respectively at 4 – 5 sensitive points and the specific location of the monitoring point was 1m to the building closely neighboring the construction site (for school the point is 1m to the teaching buildings or dormitories). Frequency was once a month and each time lasted one day with monitoring conducted in daytime and at night. The monitoring items include Leq (equivalent continuous A sound), L₁₀, L₅₀ and L₉₀.

Surface Water Monitoring

According to the requirements of *Technical Service Contract for Environmental Monitoring of Nanning (Tanluo) – Baise Express Highway during Construction Period*, monitoring was conducted at the sections 200m downstream to the piers of the bridges being constructed over the Right River at Zhenliu, Jin Jitan, Baifeng and Jiangba.

3. Monitoring Basis and Assessment Standard

Monitoring Basis

- 1) *Environmental Impact Assessment on Nanning (Tanluo) – Baise Express Highway*
- 2) *Technical Service Contract for Environmental Monitoring of Nanning (Tanluo) – Baise Express Highway during Construction Period*
- 3) *Monitoring and Analysis Methods for Air and Waste Air (4th edition)*
- 4) *Technical Specification for Environmental Monitoring (Volume III)*
- 5) *Corpus of Environmental Protection Standards*

Assessment Standards

- 1) Grade II standards of *Standard of Ambient Air Quality* (National Standard GB3095-1996) are applicable for the ambient air around the highway. The Standard Limit Value of TSP is in table 3-1.

Table 3-1 Standard Limit Value for Ambient Air Quality

Unit: mg/m³

Monitoring Item	Standard Limit Value
TSP	0.30

- 2) Corresponding standards in *Standard of Environmental Noise of Urban Area* (National Standard GB3096-93) are adopted. Please refer to table 3-2 for the value.

Table 3-2 Standard Limit Value of Building Construction Border Noise

Unit: Equivalent Continuous A Sound Leq [dB(A)]

Construction Stage	Main Noise Source	Limit Value of Noise	
		In Daytime	At Night
Earth work	Bulldozer, scraper, loader, etc.	70	55

- 3) As the bridges over the Right River at Zhenliu, Jin Jitan, Baifeng and Jiangba belong to Class III Surface Water Environment Function Area, grade III standards of *Standard of Surface Water Resource Quality* (SL 63-94) was applicable for analysis of SS. For other items, Grade III standards of *Standard of Surface Water Environment Quality* (National Standard GB3838-2002) are adopted. Please find table 3-3 for details.

Table 3-3 Standards for Surface Water Pollutants

Items	Sampling Period	Limited Value for Grade III Standard (mg/l except for pH)
pH value	Rainy season	6~9
COD _{Mn}		≤6
Petroleum		≤0.05
SS		≤30

4. Analysis Methods and Quality Control Measures

In order to ensure representativeness, accuracy and comparability of the monitoring data, strict quality control measures were taken in the whole process of the environmental monitoring. Monitoring devices were checked and identified to be acceptable by metrological service department, and also adjusted according to relevant regulations before being used. 100 % of the operators undertaking the monitoring and analysis tasks were qualified with working certification issued by National Environmental Monitoring Center.

Monitoring on ambient air was conducted based on *Monitoring and Analysis Methods for Air and Waste Air* and *Technical Specification for Air Environmental Monitoring* issued by NEPA. Noise monitoring complied with *Technical Specification for Environmental Monitoring (Noise Monitoring)* and *Measurement Methods of Environmental Noise of Urban Area* (National Standard GB/T14623-93). Table 4-1 to 4-3 show the analysis methods, detection limit, monitoring instruments and serial numbers of each monitoring item.

Table 4-1 Monitoring Items and Analysis Methods of Ambient Air

Unit: mg/m³

Monitoring Items	Analysis Method	Detection Limit
TSP	Gravimetry (National Standard GB/T15432-1995)	0.001

Table 4-2 Monitoring Methods of Noise

Unit: dB(A)

Monitoring Items	Analysis Method	Detection Limit
Equivalent Continuous A Sound (Leq)	Measurement Method of Building Construction Border Noise (National Standard GB12524-90)	-

Table 4-3 Monitoring Methods of Surface Water

Unit: mg/m³

Water Temperature	Thermometer method (GB13195-91)	0.1℃
Flowing velocity	Instrumental method	
pH value	Glass electrode method (GB6920-86)	0.02pH
COD _{Mn}	Permanganate index (GB11914-89)	0.5
Petroleum	Infrared spectrophoto (GB/T16488-1996)	0.04
SS	Gravimetric method (GB11901-89)	4

Table 4-4 Monitoring Instruments and Main Technical Index

Monitoring Items	Monitoring Instruments	
	Model	Main Technical Index
Noise	HS6288 Multi-function noise analyzer	Resolution ratio: 0.1dB
SS	TH-150C II TSP intelligent sampling tank TH-150C III TSP intelligent sampling tank	Adjusting range of sampling volume 90~120L/min
Surface Water	BS210S electronic balance	Measurement range: 0~210g, Accuracy: 0.0001 g
	Thermo Orion868 pH meter	0.02pH
	OIL420 infrared spectroscopic oil meter	Detection limit: 0.04mg/L
	LS25-3C flowing velocity meter	Measurement range: 0.04~10m/s

5. Monitoring Result

Ambient Air Quality

Please find the monitoring results in table 5-1.

Noise of Residential Area

Please find the result in table 5-2 to table 5-13.

Surface Water Environment Quality

Please refer to table 5-14 for the result.

Table 5-1 Monitoring Result on TSP in the Ambient Air

Pile No.	Name of Sensitive Point	Date	Result (mg/m ³)
K59+650	Dao'e Village	Jan. 12th	0.211
K63+700	Jiujia Village	Jan. 12th	0.165
K64+200	Tiandie in Xin'an	Jan. 12th	0.174
K81+500	Guohua Junior Middle School	Jan. 12th	0.142
K15+600	Langwan Village	Feb. 2 nd	0.115
K20+500	Longxiang School of Nanning	Feb. 2 nd	0.110
K30+150	Banze	Feb. 2 nd	0.113
K49+100	Naxv	Feb. 2 nd	0.109
K166+700	Hope Primary School in Nayin Sponsored by Military sub-command in Baise Prefecture	Mar. 27 th	0.137
K166+800	Xiangshui of Nayin Village	Mar. 27 th	0.150

K175+100	Dongyin Village	Mar. 27 th	0.204
K181+200	Dormitory of Yin Hai Aluminium Co.	Mar. 27 th	0.191
K147+700	Wanjiang Village	Apr. 23 rd	0.202
K158+200	Xingwang	Apr. 23 rd	0.201
LK2+000	Xingcheng Village	Apr. 23 rd	0.213
LK3+060	Nalai	Apr. 23 rd	0.209
K0+950	Tunlan	May. 25 th	0.104
K2+600	Na Xuepo	May. 25 th	0.108
K6+900	Jiu Tiantang	May. 25 th	0.107
K7+700	Gong Jiaopo	May. 25 th	0.108
K57+800	Namin	Jun. 20 th	0.100
K59+650	Dao'e Village	Jun. 20 th	0.112
K60+200	Longju village	Jun. 20 th	0.110
K63+450	Zhuangnei	Jun. 20 th	0.109
K63+450	Zhuangnei	Jul. 30 th	0.151
K63+700	Jiujia Village	Jul. 30 th	0.154
K64+200	Tiandie in Xin'an	Jul. 30 th	0.132
K81+500	Guohua Junior Middle School	Jul. 30 th	0.136
K147+700	Wanjiang Village	Aug. 27 th	0.170
K158+200	Xingwang	Aug. 27 th	0.183
K166+800	Xiangshui of Nayin Village	Aug. 27 th	0.174
K175+100	Dongyin Village	Aug. 27 th	0.192
K15+600	Langwan Village	Sep. 25 th	0.179
K20+500	Longxiang School of Nanning	Sep. 25 th	0.123
K49+100	Naxv	Sep. 25 th	0.164
K50+200	Lutuo Village	Sep. 25 th	0.160
C4K57+800	Namin	Oct. 27 th	0.180
C4K59+650	Dao'e Village	Oct. 27 th	0.166
C4K64+200	Tiandie in Xin'an	Oct. 27 th	0.170
C5K81+500	Guohua Junior Middle School	Oct. 27 th	0.168
C6K89+200	Dabu	Nov. 12 th	0.132
C6K90+250	Poyan	Nov. 12 th	0.136
C12K181+200	Dormitory of Yin Hai Aluminium Co.	Nov. 12 th	0.137
C12K182+400	Jiangba of Jiangfeng Village	Nov. 12 th	0.140
C3K49+100	Naxv	Dec. 18 th	0.122
C3K50+200	Lutuo Village	Dec. 18 th	0.121
C4K57+800	Namin	Dec. 18 th	0.117
C4K59+650	Dao'e Village	Dec. 18 th	0.119

Standard Limit Value	0.30
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Table 5-2 Monitoring Result on Noise of Residential Area in January, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Dao'e Village (K59+650)	Across	Jan. 12 th	60.5	51.3	In daytime: 75
2	Jiujia Village (K63+700)	Across	Jan. 12 th	53.7	—	
3	Tiandie in Xin'an (K64+200)	10m to the left	Jan. 12 th	57.3	—	
4	Guohua Junior Middle School (K81+500)	30m to the left	Jan. 12 th	51.5	—	At night: 55

Table 5-3 Monitoring Result on Noise of Residential Area in February, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Langwan Village (K15+600)	Across	Feb. 2 nd	51.7	—	In daytime: 75
2	Longxiang School (K20+500)	20m to the left side	Feb. 2 nd	50.4	—	
3	Banze (K30+150)	40m to the left side	Feb. 2 nd	48.2	—	
4	Naxv (K49+100)	15m to the left	Feb. 2 nd	50.3	—	At night: 55

Table 5-4 Monitoring Result on Noise of Residential Area in March, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Hope Primary School in Nayin Sponsored by Military sub-command in Baise Prefecture (K166+700)	10m to the left	Mar. 27 th	54.8	—	In daytime: 75 At night: 55
2	Xiangshui of Nayin Village (K166+800)	At the left edge	Mar. 27 th	53.3	—	
3	Dongyin Village (K175+100)	At the right edge	Mar. 27 th	57.4	—	
4	Dormitory of Yinhai Aluminium Co. (K181+200)	20m to the right	Mar. 27 th	56.7	—	

Table 5-5 Monitoring Result on Noise of Residential Area in April, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Wanjiang Village K147+700	10m to the left	Apr. 23 rd	67.8	51.3	In daytime: 75
2	Xingwang K158+200	At the right edge	Apr. 23 rd	65.4	—	
3	Xingcheng Village LK2+000	At the left edge	Apr. 23 rd	58.6	—	

4	Nalai LK3+060	At the right edge	Apr. 23 rd	54.2	—	At night: 55
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Table 5-6 Monitoring Result on Noise of Residential Area in May, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Tunlan K0+950	10m to the right	May. 25 th	52.1	—	In daytime: 75 At night: 55
2	Na Xuepo K2+600	10m to the right	May. 25 th	51.4	—	
3	Jiu Tiantang K6+900	10m to the right	May. 25 th	55.3	—	
4	Gong Jiaopo K7+700	50m to the left	May. 25 th	55.8	—	

Table 5-7 Monitoring Result on Noise of Residential Area in June, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Namin K57+800	At the left edge	Jun. 20 th	52.7	—	In daytime: 75 At night: 55
2	Dao'e Village K59+650	Across	Jun. 20 th	55.4	—	
3	Longju Village K60+200	Across	Jun. 20 th	51.2	—	
4	Zhuangnei K63+450	At the right edge	Jun. 20 th	51.9	—	

Table 5-8 Monitoring Result on Noise of Residential Area in July, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Zhuangnei K63+450	At the right edge	Jul. 30 th	53.8	—	In daytime: 75
2	Jiujia Village K63+700	Across	Jul. 30 th	55.9	—	
3	Tiandie in Xing'an K64+200	10m to the left	Jul. 30 th	58.3	—	
4	Guohua Junior Middle School K81+500	30m to the left	Jul. 30 th	50.7	—	At night: 55

Table 5-9 Monitoring Result on Noise of Residential Area in August, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Wanjiang Village K147+700	10m to the left	Aug. 27 th	55.8	—	In daytime: 75
2	Xingwang K158+200	At the right edge	Aug. 27 th	58.7	—	
3	K166+800	At the left edge	Aug. 27 th	6.6	—	
4	Dongyin Village K175+100	At the right edge	Aug. 27 th	59.4	—	At night: 55

Table 5-10 Monitoring Result on Noise of Residential Area in September, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Langwan Village K15+600	Across	Sep. 25 th	62.2	—	In daytime: 75 At night: 55
2	Longxiang School of Nanning K20+500	20m to the left	Sep. 25 th	57.9	—	
3	Naxv K49+100	15m to the left	Sep. 25 th	60.5	—	
4	Lutuo Village K50+200	At the left edge	Sep. 25 th	58.1	—	

Table 5-11 Monitoring Result on Noise of Residential Area in October, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Namin K57+800	At the left edge	Oct. 27 th	56.9	—	In daytime: 75 At night: 55
2	Dao'e Village K59+650	Across	Oct. 27 th	54.2	—	
3	Tiandie in Xing'an K64+200	10m to the left	Oct. 27 th	58.2	—	
4	Guohua Junior Middle School K81+500	30m the left	Oct. 27 th	55.0	—	

Table 5-12 Monitoring Result on Noise of Residential Area in November, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Dabu K89+200	At the left edge	Nov. 12 th	57.7	—	In daytime: 75 At night: 55
2	Poyan K90+250	At the right edge	Nov. 12 th	55.5	—	
3	Dormitory of Yin Hai Alumnum Co. K181+200	20m to the right	Nov. 12 th	53.3	—	
4	Jiangba of Jiangfeng Village K182+400	Across	Nov. 12 th	58.0	—	

Table 5-13 Monitoring Result on Noise of Residential Area in December, 2007

Unit: dB(A)

No.	Name and Pile No.	Distance to Centerline of the Road (m)	Date of Monitoring	Leq		Standard Limit Value
				In daytime	At night	
1	Naxv K49+100	15m to the left	Dec. 18 th	54.3	—	In daytime: 75 At night: 55
2	Lutuo Village K50+200	At the left edge	Dec. 18 th	56.1	—	
3	Namin K57+800	At the left edge	Dec. 18 th	57.7	—	
4	Dao'e Village K59+650	Across	Dec. 18 th	57.4	—	

Table 5-14 Monitoring Results on Surface Water Environment (in Jun.)

Monitoring location	Monitoring Time		Monitoring result						Excessive Rate (%)			
			Flowing velocity (m/s)	Water Temp. (°C)	pH	COD _{Mn}	Petroleum	SS	pH	COD _{Mn}	Petroleum	SS
Zhenliu Bridge	a.m.	Left	0.69	28.0	7.61	3.1	<0.04	21	—	—	—	—

		Middle	0.68	28.0	7.64	3.4	<0.04	20	—	—	—	—
		Right	0.69	28.0	7.60	3.3	<0.04	22				
	p.m.	Left	0.69	28.0	7.61	3.0	<0.04	23	—	—	—	—
		Middle	0.69	28.0	7.61	3.5	<0.04	24	—	—	—	—
		Right	0.69	28.0	7.61	3.2	<0.04	21	—	—	—	—
Jin Jitan Bridge	a.m.	Left	0.61	28.2	7.42	2.5	<0.04	18	—	—	—	—
		Middle	0.61	28.2	7.42	2.8	<0.04	20	—	—	—	—
		Right	0.61	28.2	7.41	2.1	<0.04	22				
	p.m.	Left	0.61	28.2	7.44	2.4	<0.04	20	—	—	—	—
		Middle	0.61	28.2	7.41	2.5	<0.04	21	—	—	—	—
		Right	0.61	28.2	7.42	2.8	<0.04	23	—	—	—	—
Baifeng Bridge	a.m.	Left	0.67	28.1	7.60	3.8	<0.04	25	—	—	—	—
		Middle	0.67	28.1	7.57	3.1	<0.04	25	—	—	—	—
		Right	0.68	28.1	7.62	3.7	<0.04	22	—	—	—	—
	p.m.	Left	0.67	28.1	7.60	3.6	<0.04	22	—	—	—	—
		Middle	0.67	28.1	7.56	3.5	<0.04	22	—	—	—	—
		Right	0.68	28.1	7.60	3.4	<0.04	23				
Jiangba Bridge	a.m.	Left	0.70	28.0	7.83	2.7	<0.04	21	—	—	—	—
		Middle	0.70	28.0	7.83	2.2	<0.04	24	—	—	—	—
		Right	0.70	28.0	7.81	2.5	<0.04	20	—	—	—	—
	p.m.	Left	0.70	28.0	7.84	2.4	<0.04	20	—	—	—	—
		Middle	0.70	28.0	7.84	2.3	<0.04	22	—	—	—	—
		Right	0.70	28.0	7.85	2.1	<0.04	20	—	—	—	—

Table 5-15 Monitoring Results on Surface Water Environment (in Dec.)

Monitoring location	Monitoring Time	Monitoring result						Excessive Rate (%)				
		Flowing velocity (m/s)	Water Temp. (°C)	pH	COD _{Mn}	Petroleum	SS	pH	COD _{Mn}	Petroleum	SS	
Zhenliu Bridge	a.m.	Left	0.77	11.1	8.01	3.1	<0.04	25	—	—	—	—
		Middle	0.77	11.1	8.02	2.9	<0.04	22	—	—	—	—
		Right	0.77	11.1	8.02	3.0	<0.04	26				
	p.m.	Left	0.77	11.1	8.01	2.9	<0.04	25	—	—	—	—
		Middle	0.77	11.1	8.01	2.9	<0.04	24	—	—	—	—
		Right	0.77	11.1	8.03	3.0	<0.04	26	—	—	—	—
Jin Jitan Bridge	a.m.	Left	0.68	10.5	7.97	2.8	<0.04	24	—	—	—	—
		Middle	0.68	10.5	7.99	2.6	<0.04	20	—	—	—	—
		Right	0.68	10.5	8.01	2.6	<0.04	23				
	p.m.	Left	0.68	10.5	7.95	2.8	<0.04	24	—	—	—	—
		Middle	0.68	10.5	7.96	2.5	<0.04	21	—	—	—	—

		Right	0.68	10.5	7.98	2.4	<0.04	24	—	—	—	—
Baifeng Bridge	a.m.	Left	0.72	10.2	7.89	2.8	<0.04	23	—	—	—	—
		Middle	0.72	10.2	7.81	3.3	<0.04	19	—	—	—	—
		Right	0.72	10.2	7.88	3.0	<0.04	24	—	—	—	—
	p.m.	Left	0.72	10.2	7.88	3.2	<0.04	24	—	—	—	—
		Middle	0.72	10.2	7.82	3.0	<0.04	20	—	—	—	—
		Right	0.72	10.2	7.88	3.3	<0.04	22				
Jiangba Bridge	a.m.	Left	0.65	10.6	7.84	2.9	<0.04	24	—	—	—	—
		Middle	0.65	10.6	7.83	2.8	<0.04	21	—	—	—	—
		Right	0.65	10.6	7.81	3.1	<0.04	22	—	—	—	—
	p.m.	Left	0.65	10.6	7.84	2.4	<0.04	23	—	—	—	—
		Middle	0.65	10.6	7.82	2.6	<0.04	22	—	—	—	—
		Right	0.65	10.6	7.85	2.6	<0.04	24	—	—	—	—

6. Assessment Results

Quality of Ambient Air

The above on-site monitoring results represent that TSP concentrations in ambient air in all monitoring points were within the grade II standards of *Standard of Ambient Air Quality* (GB3095-1996) from Jan. to Dec, which shows that the construction brought very slight impact on ambient air in 2007.

Assessment of Acoustic Environment

The environmental monitoring results of residential areas show that acoustic levels in daytime in the residential areas within 50m to roadside complied with the relevant standards in *Standard of Environmental Noise of Urban Area* (GB3096-93). Some sensitive points were not monitored at night since no construction had been carried out at the time

Assessment of Surface Water Environment

pH values, COD_{Mn} and Petroleum at the sections 200m downstream to the piers of all bridges being constructed, including those at Zhenliu Bridge, Jinji Tan Bridge, Baifeng Bridge and Jiangba Bridge, met grade III standards of *Standard of Surface Water Environment Quality* (National Standard GB3838-2002) while SS values at the same sections were also within grade III standards of *Standard of Surface Water Resource Quality* (SL 63-94).

In all, the subgrade construction brought little impact on ambient air, acoustic and water environment of the residential areas within 50m to roadside.