

世行贷款

石家庄城市交通项目后续项目
环境影响报告书
(简本)

建设单位：石家庄城市交通项目办公室

环评单位：河北科技大学

证书编号：国环评证乙字第1215号

编制时间：2007年7月18日

1

1999

2004 3 18

"

"

2004 9

2006 10 30 11 4

2

2.1 环境质量标准

- 1 GB3095-1996
- 2 GB3096-93
- 4 GB3096-93 2
- 3 GB10070-88
- 4

2.2 污染物排放标准

- 1 GB16297 1996 2
- 2 GB12523-90

3

5

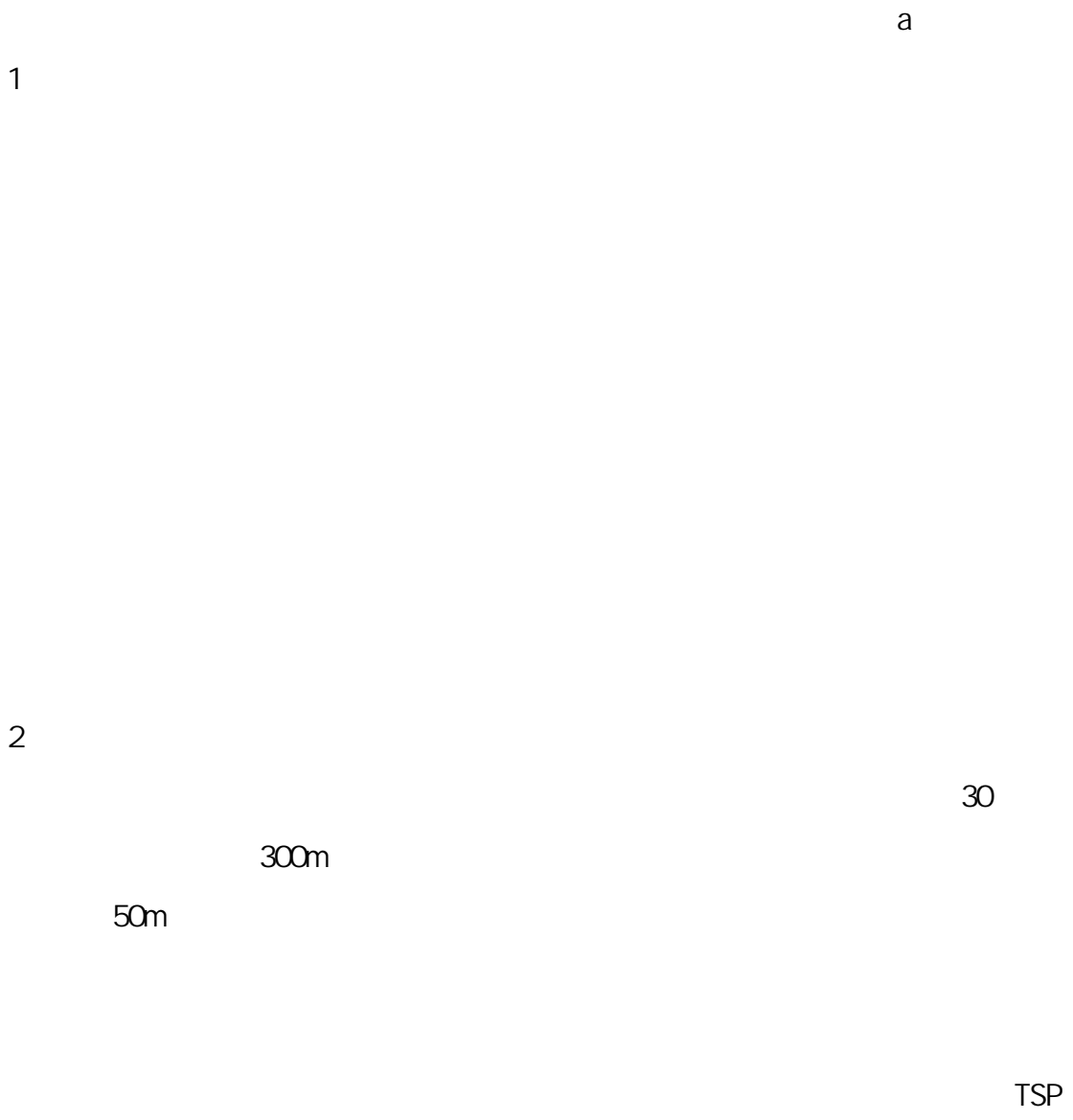
33953.80

27110.31

4

4.1 施工期环境影响

4.1.1



4-1

4-1

	10m	1.75	0.437

TSP	20m	1.30	0.350
	30m	0.780	0.310
	40m	0.365	0.265
	50m	0.345	0.250
	100m	0.330	0.238

3

$0.00936 \mu\text{g}/\text{m}^3$ GB16297 1996 80 150 mg/m^3
 $\mu\text{g}/\text{m}^3$ 100m GB3095 1996 0.01

4.1.2

4.1.2.1 施工机械及噪声源强

4-2

	m	dB(A)
	5	86
	5	90
	5	84
	5	86
	7.5	88
	5	87

4.1.2.2 施工噪声影响范围

GB12523-90

$$L_A = L_{0'} - 20 \lg(r_A/r_0)$$

 L_A ---- r_A dB(A)

 $L_{0'}$ ---- r_0 dB(A)

4-3

4-3

dB	m							dB		m	
	10	20	40	60	80	100	150				
	80.0	74.0	68.0	64.4	62.0	60.0	56.5	75	55	18	177
	84.0	78.0	72.0	68.4	66.0	64.0	60.5	75	55	28	281
	78.0	72.0	66.0	62.4	60.0	58.0	54.5	75	55	14	140
	85.5	79.5	73.5	70.0	67.0	65.5	62.0	75	55	34	335
	80.0	74.0	68.0	64.4	62.0	60.0	56.5	70	55	31	177
	81.0	75.0	69.0	65.4	63.0	61.0	57.5	70	55	35	199

35m

335m

GB12523-90

4.1.3

1 35 m
(GB12523 90) 335m

2 5 30m

3

4.1.4

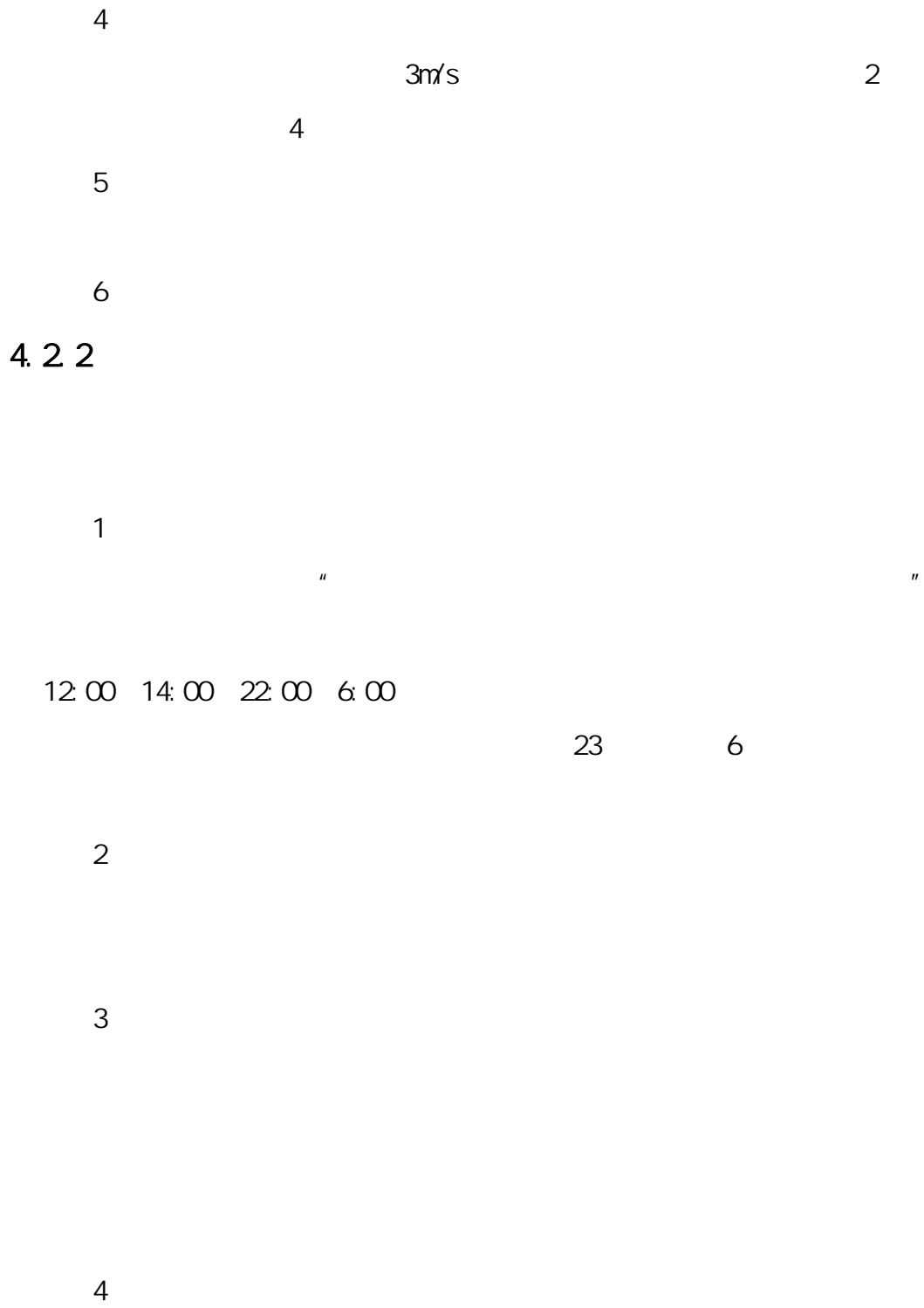
4.1.4.1 振动标准

GB10070-88 4-4

4-4 Z dB

	Z	dB
	65	65
	70	67
	75	72
	75	72
	75	72
	80	80

(-)



5

4.2.3

1

2

3

4.2.4

5523.82m³

61295.1 m³

1

2

3

5

5.1 营运期环境影响

5.1.1

5.1.1.1 分析方法

EPA Mobile5b CALINE4
 I SCLT Industrial Source

Complex Long Term

5-1

5-1

	Mobile5b	CALINE4	I SCLT	
	2001		60m	60m
				2x 2km
	BRIDGE		CALINE4	GRADE
	20km/h	30km/h		
	15 30	12.5	15°	1.6m/s 0.5m/s E
		NO ₂ 0.05ng/m ³	CO 3ng/m ³ ppm	CO 2ng/m ³ NO ₂ 0.06ng/m ³

*

11 15 3 15

5.1.1.2 车辆排放污染物源强分析

MOBILE5

MOBILE5



(BEF)

MOBILE5

FTP

FTP

MOBI LE5

8

LDGV 1991

8

LDGT

$$BEF = ZML + DR_1 \times 8 + DR_2 \times (M_C - 8)$$

$$BEF = ZML + DR \times M_C$$

BEF	(g/km)
ZML	(g/mile)
DR ₁	(g/km 10 ⁴ km)
DR ₂	(g/km 10 ⁴ km)
M _C	(10 ⁴ km)



$$C_r = (RG_1 + RG_2 \times R_v) / RG_3 \times (T_a - T_1) / T_2$$

RG ₁	RG ₂	RG ₃
R _v	(psi)	
T _a		
T ₁	T ₂	



FTP

MOBI LE5

80

HDGV MC

$$C_T = \exp(T_T \times T_F)$$

1980 1983 LDGV 1981 1986 LDGT

$$C_{T1} = 1 + \exp(RG_{23} \times \Delta R) \times (T_a - T_1) / T_2$$

$$C_T = C_{T1} \times \exp(T_T \times T_F)$$

1984 2020 LDGV 1987 2020 LDGT:

$$C_{T1} = \exp(RG_{23} \times \Delta R) \times (T_a - T_1) / T_2$$

$$C_T = C_{T1} \times \exp(((1 - T_{B1} - P_{F1}) \times T_{T1} + T_{B1} \times T_{T2} P_{F1} \times T_{T3}) \times T_F)$$

C_T

T_F

FTP

R

FTP

RG_{23}

T_T

T_{T1}

T_{T2}

T_{T3}

T_{B1}

P_{F1} :



-

$$M_r = \sum_{IB=1}^3 C_{FIB} \times C_{TIB} \times (ZB_{FIB} + DB_{FIB} \times B_M)$$

$$B_F = ZB_F + DB_F \times B_M$$

$$C_O = M_T / B_F$$

C_O

C_F

C_T

ZB_F 0

DB_F

B_M

(10⁴kn)



LDGV

LDGT

MC

$$SC_1 = \exp(SK_1 + SK_2 \times V + SK_3 \times V^2 + \dots + SK_6 \times V^5)$$

$$SA_1 = \exp(SK_1 + SK_2 \times V_C + SK_3 \times V_C^2 + \dots + SK_6 \times V_C^5)$$

$$C_s = SC_1 / SA_1$$

$$C_s = \exp(GB_3 \times V^2 + GB_2 \times V + GB_1)$$

$$C_s = \exp(GB_3 \times (V^2 - V_c^2) + GB_2 \times (V - V_c))$$

GB₁ GB₂ GB₃

V

V_c FTP



MOBI LE5

$$EF_{BY} = (BEF + B_T - B_{IM}) \times C_R \times C_O \times C_S \times C_A$$

EF_{BY}

B_T

B_{IM} I/M

C_A

MOBI LE5

MOBI LE5

MOBI LE5

MOBI LE5

5.1.1.3 车辆排放污染物源强分析

1

NOX CO HC

JTJ005-96

CO NOX

2

MOBI LE5b

MOBI LE5b

8

LDGV

1

LDGT1

2 LDGT2

HDGV

LDDV

LDDT

HDDV

MC

2009 2015

5-2

1 2001 4 GB18352 1-2001

1 GB17691-2001

1

2 2004 7 GB18352 2-2001

2

5-2 2009 2015

g/km

(km/h)		LDGV		LDGT1		LDGT2		HDGV		LDDV		LDDT		HDDV		MC
		2009	2015	2009	2015	2009	2015	2009	2015	2009	2015	2009	2015	2009	2015	2009
25	HC	5.54	1.29	8.11	1.67	10.58	3.38	10.35	1.47	1.22	0.47	1.55	0.40	4.18	2.46	5.06
	CO	31.26	12.83	29.51	13.83	45.90	22.44	99.23	28.85	2.72	1.14	3.09	1.14	6.40	6.98	21.89
	NOx	1.68	1.51	2.73	1.54	3.04	2.32	4.59	3.13	2.42	1.04	2.71	1.08	11.04	8.33	0.13
	HC	3.88	1.22	4.77	1.32	6.16	2.27	9.90	2.55	1.22	0.47	1.55	0.41	4.06	2.20	13.37
	CO	26.45	9.64	22.34	8.53	36.60	15.89	97.78	27.98	2.73	1.14	3.09	1.14	6.36	6.97	14.77
	NOx	1.65	1.14	2.36	1.12	2.89	1.70	4.51	2.70	2.42	1.04	2.71	1.08	10.86	8.39	0.11
30	HC	5.01	1.17	7.27	1.50	9.49	3.03	8.31	1.19	1.07	0.42	1.37	0.35	3.68	2.16	4.42
	CO	28.36	11.63	26.98	12.65	41.97	20.52	81.79	23.78	2.27	0.95	2.58	0.94	5.34	5.82	18.17
	NOx	1.65	1.49	2.69	1.52	2.99	2.29	4.72	3.23	2.24	0.96	2.52	0.99	10.24	7.72	0.14
	HC	3.49	1.09	4.28	1.18	5.52	2.03	8.40	2.30	1.07	0.42	1.37	0.35	3.57	2.03	12.90
	CO	24.00	8.74	20.43	7.80	33.46	14.52	80.60	23.06	2.27	0.95	2.58	0.94	5.30	5.81	12.26
	NOx	1.62	1.12	2.32	1.11	2.85	1.67	4.64	2.78	2.24	0.96	2.52	0.99	10.07	7.65	0.11
35	HC	4.39	1.03	6.43	1.32	8.39	2.68	6.83	0.97	0.95	0.37	1.22	0.32	3.28	1.93	3.97
	CO	24.29	9.96	23.40	10.97	36.40	17.79	69.30	20.15	1.94	0.81	2.20	0.81	4.55	4.97	15.61
	NOx	1.67	1.50	2.67	1.51	2.98	2.27	4.85	3.31	2.11	0.91	2.37	0.94	9.64	7.27	0.15
	HC	3.09	0.98	3.82	1.08	4.91	1.82	7.32	2.13	0.96	0.37	1.22	0.32	3.18	1.88	12.59
	CO	20.56	7.48	17.72	6.77	29.02	12.60	68.29	19.54	1.94	0.81	2.20	0.81	4.52	4.96	10.54
	NOx	1.64	1.13	2.31	1.10	2.83	1.67	4.77	2.87	2.11	0.91	2.37	0.94	9.48	7.13	0.12
40	HC	3.87	0.90	5.74	1.18	7.49	2.39	5.70	0.81	0.86	0.33	1.09	0.29	2.95	1.73	3.62
	CO	20.61	8.45	20.12	9.43	31.31	15.30	59.98	17.44	1.68	0.71	1.91	0.70	3.95	4.31	13.62
	NOx	1.69	1.53	2.68	1.51	2.98	2.28	4.98	3.40	2.02	0.87	2.26	0.89	9.21	6.94	0.16
	HC	2.76	0.89	3.45	0.99	4.42	1.65	6.52	2.00	0.86	0.34	1.09	0.29	2.86	1.73	12.33
	CO	17.44	6.35	15.24	5.82	24.96	10.83	59.10	16.91	1.69	0.70	1.91	0.70	3.93	4.06	9.19
	NOx	1.67	1.15	2.31	1.10	2.84	1.67	4.90	2.94	2.02	0.87	2.26	0.89	9.06	6.93	0.13

45	HC	3.46	0.81	5.21	1.07	6.80	2.17	4.83	0.69	0.78	0.30	0.99	0.25	2.67	1.57	3.33
	CO	17.75	7.28	17.57	8.23	27.34	13.08	53.01	15.41	1.49	0.62	1.69	0.62	3.49	3.81	11.98
	NO _x	1.71	1.55	2.69	1.52	2.99	2.29	5.11	3.49	1.95	0.84	2.19	0.86	8.92	6.72	0.17
	HC	2.51	0.81	3.17	0.92	4.04	1.52	5.90	1.90	0.78	0.30	0.99	0.26	2.59	1.44	12.12
	CO	15.02	5.47	13.31	5.08	21.80	9.46	52.24	14.95	1.49	0.62	1.69	0.62	3.47	3.81	8.08
	NO _x	1.69	1.16	2.32	1.11	2.84	1.67	5.03	3.01	1.95	0.84	2.19	0.86	8.77	6.80	0.13
50	HC	3.14	0.73	4.78	0.98	6.24	2.00	4.17	0.59	0.71	0.27	0.91	0.24	2.44	1.43	3.08
	CO	15.45	6.34	15.53	7.28	24.16	11.81	47.86	13.92	1.34	0.56	1.52	0.56	3.14	3.43	10.61
	NO _x	1.73	1.56	2.69	1.52	3.00	2.29	5.24	3.58	1.92	0.83	2.15	0.85	8.75	6.60	0.18
	HC	2.30	0.76	2.94	0.86	3.73	1.41	5.41	1.82	0.71	0.28	0.91	0.24	2.37	1.43	11.94
	CO	13.08	4.76	11.76	4.49	19.27	8.37	47.16	13.49	1.34	0.56	1.52	0.56	3.12	3.42	7.16
	NO _x	1.70	1.17	2.32	1.11	2.85	1.68	5.16	3.10	1.92	0.83	2.15	0.85	8.60	6.51	0.14

5-2 HDGV CO
HDDV NO_x 2009 2015

5.1.1.4 道路两侧环境空气影响评价

100m

15-20m

CALI NE4

CALI NE4

$$C = \frac{Q}{2\pi \cdot u \cdot \sigma_z} \cdot \left\{ \exp\left[\frac{-(z+H)^2}{2\sigma_z^2}\right] + \exp\left[\frac{-(z-H)^2}{2\sigma_z^2}\right] \right\} \cdot \int_{y_1/\sigma_y}^{y_2/\sigma_y} \exp\left(\frac{-p^2}{2}\right) \cdot dp$$

C — (x y z) (ng/m³)

Q — (ng/s · m)

u — (m/s)

H — (m)

z — (m)

y — (m)

z — (m)

P — P=y/ y

CALI NE4

$$W = T \times (2u \times \sin \theta) \quad (\theta = 45^\circ) \quad W = T \times (2u \times \sin 45^\circ) \quad (\theta < 45^\circ)$$

W ——— (m)
 T ——— (s)
 u ——— (m/s)
 ——— ()

(1) 1.6m/s

E F

(2) 0.5m/s E F

● CO NO₂

● 2009 () 2015 ()

●

● 150 500

●

() ()

EPA CALINE4

30m 50m 100m 150m 500m CO NO_x

0.5m/s E F

2000 GB3096 1996

NO_x

NO_x

NO₂

NO₂/NO_x 0.75

5-3 5-6

1 ()

5-3 CO NO₂

			CO ng/m ³				NO ₂ ng/m ³			
			30m	50m	100m	150m	30m	50m	100m	150m
2009			4.5	3.9	3.6	3.5	0.16	0.12	0.10	0.09
			3.6	3.0	2.6	2.4	0.14	0.11	0.08	0.06
			12.2	9.6	6.4	5.4	0.70	0.46	0.30	0.25
2015			3.6	3.4	3.3	3.3	0.11	0.09	0.08	0.08
			2.6	2.5	2.4	2.1	0.09	0.08	0.06	0.05
			6.6	5.2	4.2	4.0	0.38	0.26	0.16	0.15
ng/m ³			4.0				0.08			

a.

30m 150m CO NO₂

2009 2015 CO NO₂

b.

2009 50m CO

NO₂ 30m CO

100m NO₂

CO NO₂

2015 30m CO 100m

NO₂ 30m CO

100m NO₂ 150m CO

NO₂

2

5-4 CO NO₂

			CO ng/m ³				NO ₂ ng/m ³			
			30m	50m	100m	150m	30m	50m	100m	150m
2009			4.8	4.0	3.6	3.4	0.15	0.13	0.10	0.09
			3.4	2.9	2.6	2.4	0.14	0.10	0.08	0.06
			10.4	7.6	5.8	5.0	0.59	0.40	0.25	0.20
2015			3.8	3.5	3.4	3.3	0.12	0.10	0.09	0.08
			2.9	2.5	2.4	2.1	0.10	0.08	0.06	0.05
			7.1	5.6	4.5	4.0	0.42	0.28	0.19	0.14

ng/m ³	4.00	0.08
-------------------	------	------

a.

30m 150m CO NO₂
2009 2015 CO NO₂

b.

2009 50m CO
NO₂ 30m CO
100m NO₂ CO NO₂
2015 30m CO
NO₂ 150m 50m NO₂

3

5-5 CO NO₂

		2009			2015			(ng/m ³)
CO	30m	4.7	3.3	13.4	3.8	2.9	8.8	4.0
	50m	4.2	3.1	11.5	3.7	2.8	7.1	
	100m	3.8	2.8	8.0	3.5	2.6	5.7	
	150m	3.7	2.7	6.7	3.5	2.5	4.7	
	500m	3.3	2.6	4.7	3.3	2.4	4.1	
NO ₂	30m	0.15	0.15	0.91	0.12	0.11	0.56	0.08
	50m	0.11	0.09	0.68	0.11	0.10	0.43	
	100m	0.10	0.07	0.45	0.10	0.09	0.30	
	150m	0.13	0.10	0.39	0.10	0.08	0.26	
	500m	0.12	0.08	0.19	0.08	0.07	0.20	

a.

CO NO₂
30m 500m 2009 2015 CO NO₂

b.

2009 100m CO

NO₂ 30m CO
 500m NO₂ CO
 NO₂
 2015 30m CO 500m
 NO₂ 30m CO
 150m NO₂ CO
 NO₂

5

5-6 CO NO₂

		2009			2015			(ng/m ³)
CO (ng/m ³)	30m	4.8	3.2	15.0	3.9	3.1	9.0	4.0
	50m	4.3	2.9	12.3	3.6	2.9	7.4	
	100m	4.0	3.0	8.6	3.3	2.8	5.9	
	150m	3.8	2.8	7.0	3.3	2.5	5.3	
	500m	3.4	2.7	5.8	3.0	2.2	4.6	
NO ₂ (ng/m ³)	30m	0.17	0.15	0.98	0.13	0.13	0.56	0.08
	50m	0.12	0.10	0.74	0.12	0.11	0.43	
	100m	0.10	0.09	0.52	0.10	0.09	0.30	
	150m	0.08	0.07	0.42	0.09	0.08	0.25	
	500m	0.08	0.05	0.12	0.07	0.06	0.16	

a.

CO NO₂ 30m

500m 2009 2015 CO NO₂

b.

2009 150m CO 500m
 NO₂ 30m CO
 150m NO₂ CO NO₂
 2015 30m CO
 500m NO₂ 30m CO
 150m NO₂

∞ NO₂

5.1.2

5.1.2.1 预测方法

(GB3096-93)

1

4 100

5.1.2.2 道路交通噪声预测基本模式

(FHWA)

()

$$Leq_i = L_i + 10 \log(N_i / v_i T) - \Delta L \quad - \Delta L \quad + \Delta L \quad - 13 \text{ dB (A) } (1)$$

L_i ----- i

N_i ----- i () /

v_i ----- i km/h

T ----- Leq 1h

L ----- i dB

L ----- dB

L -----

dB

$$(Leq) = 10 \log \left[10^{0.1(Leq)S} + 10^{0.1(Leq)M} + 10^{0.1(Leq)H} \right] - \Delta L_1 - \Delta L_2 + \Delta L_3 \quad ()$$

$$(Leq) = 10 \log \left[10^{0.1(Leq)} + 10^{0.1(Leq)} \right] \quad ()$$

L1— dB

L2— dB

L3— dB

(Leq) —

(Leq) —

() ΔL

$$d_i = 1000 \frac{v_i}{N_i} \quad (m)$$

i

dl

N—i

/

(06 00 22 00)

(22 00 06 00)

$$(r_2) \quad r_2 = \sqrt{D_N D_F} \quad (m)$$

DN—

m

DF—

m

ΔL

$$r_2 \leq \frac{d_i}{2} \quad \Delta L_i = K_1 K_2 20 \log \frac{r_2}{7.5}$$

$$r_2 > \frac{d_i}{2} \quad \Delta L = 20K_1 \left[K_2 \log \frac{0.5d_1}{7} + \log \sqrt{\frac{r_2}{0.5d_i}} \right]$$

K1—

5-7

K2—

di

5-8

5-7

	K1=0.9
	K1=1.0

	K1=1.1
--	--------

5-8

D (m)	20	25	30	40	50	60	70	80	100	140	160	250
K2	0.47	0.5	0.617	0.716	0.78	0.806	0.833	0.840	0.855	0.88	0.885	0.89

()

5-9

5-9	A	dB(A)
		(L)
		0
		1 2

0

()

$$\Delta L = 98 \times \beta \quad \text{dB}$$

$$\Delta L = 73 \times \beta \quad \text{dB}$$

$$\Delta L = 50 \times \beta \quad \text{dB}$$

$$— \quad \%$$

5.1.2.3 基本预测模式参数的确定

5-10

5-10

(s)	3.5t
(m)	3.5t 12t
(L)	12t

(2)

() (JTJ005-96)

$$Y_s = 237X - s_0.1602$$

$$Y_m = 212X_m - 0.1747$$

Y_s Y_m

km/h

X_s X_m

/

80%

120km/h

120km/h

20%

(3)

L_{eq}

7.5m

L_w

5-11

5-11

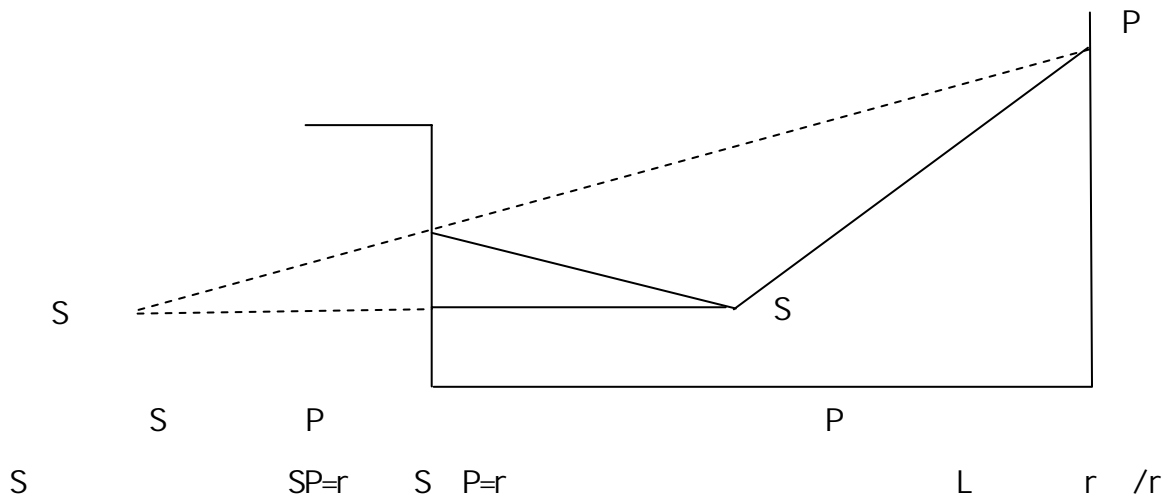
	L_w (dB(A))
	$59.3 + 0.23V_s$
	$62.6 + 0.32V_m$
	$77.2 + 0.18V_l$

W — (l) (m) (s)

V_l —

5.1.2.4 两侧有建筑物的地面道路修正值计算方法

()



$$\begin{array}{ll} r/r_1 & L = 3\text{dB(A)} \\ r/r_2 & L = 1\text{dB(A)} \end{array} \quad \begin{array}{ll} r/r_1.4 & L = 2\text{dB(A)} \\ r/r_2.5 & L = 0\text{dB(A)} \end{array}$$

40 60% 3dB(A)

70 90% 5dB(A)

1. 5dB(A)

10dB(A)

5.1.2.5 互通立交预测计算模式

$$(Leq) = 10 \log \left[10^{0.1(Leq)_1} + 10^{0.1(Leq)_2} + \dots + 10^{0.1(Leq)_i} \right]$$

dB

(Leq)	1-----	1	dB
(Leq)	2-----	2	dB
(Leq)	i-----	i	dB

5.2 营运期环境影响治理措施

5.2.1

1

2

/

I/M

3

4

5

6

7

8

∞ N_0

5.2.2

1

3-6dB

2

3

“ ”

240m 2.2 m

4

5.2.3

1

2

3

4

6

6.1 项目建设的环境管理

1

2
3
4 6 00 12 00
14 00 22 00
5
22 00 6 00 5 10 6 9
22 00 6 00
6
7
8
9

6.2 环境监测与报告

2 10.00 22.00
3 12h
7

(CP4. 01)

2006[28]

1

5

33953. 80

27110. 31

2

3

4

2007 7 19 2007 7 28

0311-85827689

0311-85827689

hbtdzy@163.com

2007 7 19