JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE PEOPLE'S GOVERNMENT OF CHENGDU, SICHUAN PROVINCE, PEOPLE'S REPUBLIC OF CHINA
SICHUAN PROVINCIAL SCIENCE & TECHNOLOGY DEPARTMENT, PEOPLE'S REPUBLIC OF CHINA

Study for Public Transportation Improvement in Chengdu City in The People's Republic of China

FINAL REPORT

APPENDICES

JULY 2001

ALMEC Corporation
CHODAI Co., ltd.

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Appendix A

TRANSPORT SURVEYS

Appendix A

TRANSPORT SURVEYS

1 PERSON TRIP SURVEY

1.1 Survey Objectives

This survey aimed to obtain the data and information for determining the trip rate and the development of trip OD (origin and destination) matrices and demand forecast models based on recent changes in socio-economic situations in the central districts of Chengdu City.

Specifically, it was to capture all transport behaviors in one day and socio-economic data such as age, sex, income, etc. through interviews to the sampled household members in the Study Area. In addition, in order to supplementarily grasp the business-purpose trips by cars, the OD interview survey to the sampled car-owning enterprises and government offices was conducted.

The sampled data was aggregated and expanded to represent the Study Area. Based on these survey data, the OD matrices (passengers, vehicles and goods) were finally developed. The results also formed the basis for analyzing the transport policies in the master plan planning.

1.2 Survey Coverage

(1) Survey Area

The Study Area was composed of six central districts (Jinjiang District, Qingyang District, Jinniu District, Chenghua District, Wuhou District and Gaoxin District) and five towns in the adjoining area (Honghe Town in Longquanyi District, Shiling Town, Dafeng Town in Xindu County, Anjing Town in Pi County and Xipu Town) in Chengdu City (Figure A.1).

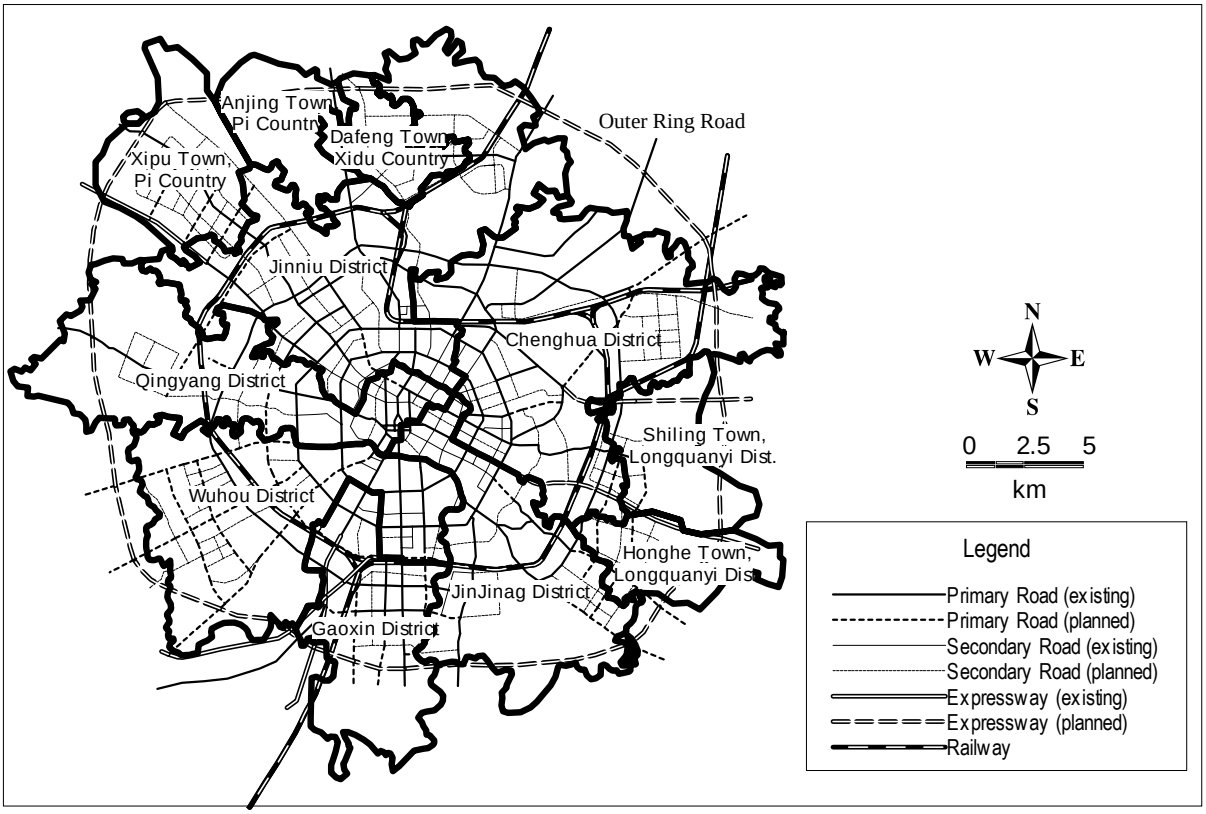
(2) Numbers of Samples

- Registered and temporary population: 45,000 persons (over 6 years old) or 1.5% of 3.1 million of total populations in the Study Area (consisting of about 2.6 million registered and about 0.5 million temporary population).

- Floating population (hotel guests etc.): 3,500 persons staying at hotels, inns and hostels in the Study Area.

- Number of cars owned by enterprises: 45,000 cars or 7.5% of 60,000 total cars owned by private enterprises and government offices.

Figure A.1 Survey Area



1.3 Methodology

(1) Preparation

A careful preparation was done on the following due to the complexity of the Survey:

1) Zoning

The survey area was divided into 125 traffic zones and the area outside of survey area was divided into 34 traffic zones. The number of traffic zone is 159 in total.

2) Estimation of population and number of cars owned by enterprises by zone

The population by zone was listed and compiled based on the house registry of inhabitants and residents in cooperation with the public securities offices of the city and district, police substations and residents' committees.

The floating population was estimated based on the number of beds in hotels and inns, and average occupancy rate. The list of hotels was prepared in advance.

The number of cars owned by private enterprises and government offices was listed and compiled based on the vehicle registry in cooperation with the vehicle registration office of the city public securities offices.

3) Sampling

Based on the list prepared, the sample households were selected by zone with regular interval in proportion to the zonal population. A list of sample households that indicates the address, name, sex and age of each household head and members was prepared.

As for floating population, the number of sampled hotel guests by zone was determined based on the number of hotel beds in the zone. And list of sample hotels was prepared.

As for the cars owned by private enterprises and government offices, based on the list mentioned above, the sample cars were selected by zone with regular interval in proportion to the total number of cars in the zone in cooperation with the vehicle registration office of the city public securities offices. A list of sample cars that indicates the address, name of enterprises and vehicle type was prepared.

4) Inspection and Publication

The survey forms were modified and confirmed by the counterpart agencies to fit the local condition through discussion on its drafts prepared by the Study Team. Necessary number of forms were printed.

The survey items were a) household information (address, number of household members, household income, number of owned cars, motorcycles and bicycles, etc.), b) household member information (age, sex, occupation, category of job or school, grade in school, etc.), c) trip information (address and facility type of trip origin/destination, trip purpose, transport mode, fare, time of departure and arrival, number of accompanied passengers, waiting time of public transport, etc.). As for the cars owned by private enterprises and government offices, items of above c) was interviewed.

5) Selection of subcontractor and establishment of survey teams

6) Announcement of survey implementation through TV, newspaper and radio

7) Training of supervisors and surveyors (including the dry-run)

(2) Survey Implementation

The surveyors visited and interviewed the head and members of the selected sample households from registered and temporary population. As for floating population, guests at the selected sample hotels were interviewed. As for cars owned by enterprises, the surveyors

visited them and drivers or staff for vehicle operation were interviewed.

As for interviewing the trip data, every actual trips made by the interviewees in a latest weekday were recorded. The surveyors always carried a map of traffic zone to show the interviewees. Locations of each trip origin and destination were recorded.

(3) Survey Implementing Organization

1) Employment and Management of Surveyors

The surveyors must be highly qualified because the survey form are complex. However it is sometimes difficult to employ qualified persons for a short period. It is also difficult to control the quality of results because the interview is done in the house. There are problems such as false answers and proxy interviews. The proxy interview is for example a wife answering her husband's trip behaviors. If it is many, it causes a lack of business and private trips which is not based at home. Therefore the contractor was the instructed following points:

Avoiding false answer: Inspectors should check the age and sex of the selected sample household in accomplished survey forms with the ones in the sampling list that was not shown to the surveyors.

Intensive surveyor training: An intensive training was conducted by the following three steps in cooperation with the Study Team:

Step 1: Explanation of the survey outline

Step 2: Pre-survey (dry-run) was carried out by surveyors to about three interviewees such as themselves, friends and families.

Step 3: a) Items that were not complete were reviewed through inspection by supervisors,b) necessary survey forms and kits ate distributed.

Preparation of manuals: There were three types of manuals. They are a) Sampling manual, b) Interview manual and c) Coding manual. They were finalized by the subcontractor based on the draft prepared by the Study Team.

2) Error Check

After checking the easy errors in the step of editing and coding, the input data was checked mechanically (blank, range and logical checks). Check program was supplied by the Study Team.

Although the survey organization and procedure were established to avoid the mistakes as much as possible, they still remained. Empirically, it takes some months for data cleaning. Since the study schedule was very tight, accomplished data were immediately gathered and checked. When some mistakes were found it was returned back to the

interviewers. The subcontractor was also checked and instructed regularly by the Study Team.

1.4 Schedule

The implementation schedule of the survey is shown in Table A.1.

Table A.1 Survey Implementation Schedule by work Item

Items	Schedule in 2000
1 . Survey design	
Design of survey forms	May 8 - June 11
Preparation of the survey sheet	June 12 - June 18
2 . Field Survey	
Training of supervisors and surveyors	June 19 - June 23
Field survey (registered/temporary population)	June 26 - June 11
(floating population)	July 17 - July 18
(car OD)	June 22 - July 14
Inspection and gathering	
(registered/temporary population)	July 1 - July 11
(floating population)	July 11 - July 24
(car OD)	July 1 - July 20
3 . Data coding	
OD / bus stops (registered/temporary population)	
(floating population)	July 14 - July 21
(car OD)	July 25 - July 29
	July 19 - July 25
4 . Data Checking	
Data Input (registered/temporary population)	July 17 - August 19
(floating population)	July 28 - August 6
(car OD)	August 2 - August 19
Data checking (registered/temporary population)	August 1 - August 9
(floating population)	August 19 - August 20
(car OD)	August 7 - August 8
Data correction (registered/temporary population)	August 1 -
(floating population)	August 20 -
(car OD)	August 8 -

1.5 Survey Form

The survey was conducted using the survey forms in the following pages.

Person Trip Survey Form (for household head)

成都市居民（ 旅客 ）一日出行调查表

行政区号	交通小区号	户序号

居民（ 旅客 ）同志：

您好！为了改善成都市交通紧张状况，成都市人民政府将同日本国际协力事业团合作共同制订成都市公共交通整治规划， 为此,中日双方决定在成都市开展一次居民（ 旅客 ）一日出行调查。请您协助调查员填写好调查表。谢谢！（ 未满 6 周岁儿童不用填写 ）

成都市公共交通系统整治规划调查领导小组

日 本 国 际 协 力 事 业 团 （JICA）

二〇〇〇年六月

调查户所在的街道名称及门牌号（ 或村、组 ）

户调查内容 （ 户主填写 ）

1.家庭成员构成情况：

家庭人口构成 / 性别	家庭常住人口数		暂住人口数		
	6 岁以上者（ 含 6 岁 ）	未满 6 周岁者	（ 1 ）一个月以上	（ 2 ）3 天以上一个月以下	（ 3 ）3 天以下、含 3 天
男 性					
女 性					

2．居住情况： ①在现居住地居住的时间：

1）未满 1 年 2）未满 1 ～ 5 年 3）未满 5 ～10 年 4）未满 10～15 年
5）未满 15～20 年 6）未满 20～25 年 7）未满 25～30 年 8）30 年以上

②今后是否有搬迁的愿望？ 1）有 2）无

3．家庭月总收入：

1）600 元以内 2）600～1000 元以内 3）1000～2000 元以内
4）2000～3000 元以内 5）3000～4000 元以内 6）4000～5000 元以内
7）5000～6000 元以内 8）6000～7000 元以内 9）7000 元以上

4．家庭拥有车辆情况：

车 种	个人所有	公司所有	车 种	个人所有	公司所有
自行车数			中型客车数		
人力三轮车数			大型客车数		
二轮摩托车数			小型货车数		
三轮摩托车数			大型货车数		
轿车数			其 它		

注：轿车类包括车长未满 6m 的小客车、面包车、微型车等；中型客车是指 30 座未满、车长在 6～9m（ 蓝色牌照 ）大型客车是指 30 座以上、车长在 9m 以上（ 黄色牌照 ）小型货车是指载重未满 1.75 吨；大型货车是指载重 1.75 吨以上。

调查员_____ 审核员_____ 编码员_____

Person Trip Survey Form (for household head and members)

家庭每个成员填写内容

个人编号

1.

性 别		年 龄	常住人口	暂 住 人 口		
1.男	2.女		1.常住人口	2.一个月以上	3.三天以上一个月以下	4.三天以下、含3天

2. 职业:

1)工人 2)农牧渔业人员 3)公司职员? 4)机关•事业单位人员 5)商业人员
6)教师 7)军人 8)专业技术人员 9)个体经营 10)服务人员
11)中小学生 12)大中专学生 13) 家务 14)待业 15)其它( )

3.工作单位•学校名称及地址(附近著名建筑物或大地名):

4.有职业和在校学生填写:

① 工作单位的行业:

1)农林渔牧业 2)地质勘探及水利 3)建筑业 4)制造业 5)运输邮电业
6)商业 7)金融、保险 8) 房地产业 9)社会服务业 10)卫生、体育、社会福利
11)教育、文化及广电业 12)科学研究、综合技术服务业 13 党政机关和社会团体
14)其它( )

② 月收入:

1)200 元以内 2)200～500 元以内 3)500～1000 元以内
4)1000～2000 元以内 5)2000～3000 元以内 6)3000 元以上

③ 学校类别:

1)小学 2)普通初中 3)普通高中 4)技校 5) 职业高中
6)中专 7)大专 8)大学

5.持有哪种驾驶执照?

1)没有 2)大型汽车执照(A 和B 执照) 3)小型汽车执照(C 执照)
4)摩托车执照(D 和E 执照) 5)其它( )

6.愿望调查:

①对限制摩托车的数量持何态度? ② 如取消对摩托车的数量限制，您是否购买摩托车?

1) 赞成 2) 反对 1) 买 2) 不买

③是否有购买汽车的计划?

1) 无 2) 有

成都市交通实态调查　机动车起终点调查（ＯＤ调查）

请记录 2000 年 □ 月 □ 日星期 □ 凌晨 3 时至次日凌晨 3 时的运行情况。

1－1．企・事业单位的所在地	1-2．驾驶员的性别	1-3．驾驶员的年龄	1-4．使用燃料	1-5．车种	1-6．行业
_____ _____ □□□□□□	请画上○。 1. 男性 2. 女性	请填写年龄。 〔　〕岁	请画上○。 1. 汽油　5. 其它 2. 柴油 3. ＬＰＧ 4. 电气	请画上○。 1. 轿车　5. 大型客车（含公交巴士） 2. 小型货车　6. 其它（特殊车等） 3. 大型货车 4. 中型客车（含公交巴士）	请在自己的行业上画○。 1. 农林渔牧业　6. 商业　11. 教育、文化及广电业 2. 地质勘探及水利　7. 金融、保险　12. 科学研究、综合技术服务业 3. 建筑业　8. 房地产业　13. 党政机关和社会团体 4. 制造业　9. 社会服务业　14. 其它（　　） 5. 运输邮电业　10. 医疗、卫生、体育、社会福利

整理编号 □□□□ 出行数 □□

行驶的有无 1 2

注：轿车类包括车长未满 6m 的小客车、面包车等；中型客车是指 30 座未满、车长在 6~9m（蓝色牌照）大型客车是指 30 座以上、车长在 9m 以上（黄色牌照）小型货车是指载重未满 1.75 吨；大型货车是指载重 1.75 吨以上。

2．出发地或到达地	3．设施的种类	4．停车场所	5．乘车人员	6．出发时刻	7．到达时刻	8．行间距离	9．驾车运行的目的	10．装载物品	11．高速公路的利用
请在所知的范围内，填写地址及具体的设施名（如建筑物名、店铺名、站名等） 如地址不详时，请填写附近较著名的建筑物名，站名等。	1. 住宅・宿舍 2. 学校・幼儿园・教育设施 3. 文化・宗教设施 4. 医疗・卫生・福利设施 5. 事务所・公司・银行 6. 党政机关・事业单位 7. 超市・百货店 8. 其它商业设施 9. 宾馆・旅店 10. 工厂 11. 交通・运输设施 12. 仓库 13. 其它设施	道路上：1. 收费　2. 免费　3. 月租 道路外 收费：4. 按时间收费　5. 店铺等的收费停车场　6. 自家车库 道路外 免费：7. 单位、访问地的场地内　8. 店铺等的停车场（包括购物奖赏的免费）　9. 车站前广场　10. 其它的空地等 不停车　11. 不停车	请填写包括驾驶员在内的乘车人员。	请在相应的 1．上午 2．下午 画上○，并用 12 小时制记下时刻。	请在相应的 1．上午 2．下午 画上○，并用 12 小时制记下时刻。	填写以 1km 最小位的距离。	1. 上班（包括下班） 2. 上学（包括放学） 3. 回家 〔私人目的〕 4. 购物 5. 吃饭・社交・娱乐（日常生活圈内） 6. 观光・游玩・度假（日常生活圈外） 7. 其它私事（看病・补习・进修） 8. 接送 〔业务目的〕 9. 销售・递送・进货・购货 10. 商谈・开会・收费・出诊 11. 作业・修理 12. 农林渔牧业作业 13. 其它业务	1. 建材 2. 煤炭 3. 木材 4. 石化产品 5. 农副产品 6. 冶金产品 7. 粮油食品 8. 机械设备 9. 矿产 10. 日用百货 11. 纺织品 12. 其它	请填写通过高速公路时的费用。

场所编号		2．出发地或到达地	3．设施的种类	4．停车场所	5．乘车人员	6．出发时间	7．到达时间	8．行间距离	9．驾车运行的目的	10．装载物品	11．利用高速公路时
0	最初在哪里？	_____ _____ 〔　〕 □□□□□□	〔　〕	〔　〕							
1	去了哪？	_____ _____ 〔　〕 □□□□□□	〔　〕	〔　〕	〔　〕	〔　〕月〔　〕日 1．上午　2．下午 〔　〕时〔　〕分	〔　〕月〔　〕日 1．上午　2．下午 〔　〕时〔　〕分	〔　〕km	〔　〕	〔　〕	〔　〕元
2	去了哪？	_____ _____ 〔　〕 □□□□□□	〔　〕	〔　〕	〔　〕	〔　〕月〔　〕日 1．上午　2．下午 〔　〕时〔　〕分	〔　〕月〔　〕日 1．上午　2．下午 〔　〕时〔　〕分	〔　〕km	〔　〕	〔　〕	〔　〕元
3	去了哪？	_____ _____ 〔　〕 □□□□□□	〔　〕	〔　〕	〔　〕	〔　〕月〔　〕日 1．上午　2．下午 〔　〕时〔　〕分	〔　〕月〔　〕日 1．上午　2．下午 〔　〕时〔　〕分	〔　〕km	〔　〕	〔　〕	〔　〕元
4	去了哪？	_____ _____ 〔　〕 □□□□□□	〔　〕	〔　〕	〔　〕	〔　〕月〔　〕日 1．上午　2．下午 〔　〕时〔　〕分	〔　〕月〔　〕日 1．上午　2．下午 〔　〕时〔　〕分	〔　〕km	〔　〕	〔　〕	〔　〕元

▷第五次出行起填写在反面

CarOD Survey Form

成都市居民（ 旅客 ）一日出行调查纪录表

2000 年　月　日星期　　的凌晨 3 时至次日凌晨 3 时的出行情况。

个人编号 [　]

[　　]

1．晴
2．雨

出发或到达地点设施代号

1. 住宅・宿舍
2. 学校・幼儿园・教育设施
3. 文娱・体育・公园・绿地・宗教设施
4. 医疗・卫生・福利设施
5. 事务所・公司・银行
6. 党政机关・事业单位
7. 超市・百货店
8. 其它商业设施（ 农贸市场、饮食服务 ）
9. 宾馆・旅店
10. 工厂
11. 交通・运输设施（ 各种车站、机场 ）
12. 仓库
13. 其它设施（ 邮电局等 ）

出行目的代号

1. 上班（ 包括下班 ）
2. 上学（ 包括放学 ）
3. 回家
私人目的：
4. 购物
5. 吃饭・社交・娱乐（ 日常生活圈内 ）
6. 观光・游玩・度假（ 日常生活圈外 ）
7. 其它私事（ 看病・补习・进修 ）
8. 接送
业务目的：
9. 销售・递送・进货・购货
10. 商谈・开会・收费・出诊
11. 作业・修理
12. 农林渔牧业作业
13. 其它业务

出行交通工具代号

1. 步行
2. 自行车
3. 人力三轮车
4. 二轮摩托车
5. 三轮摩托车
6. 出租车
7. 轿车
8. 中型客车（ 包括单位接送交通车 ）
9. 大型客车（ 包括单位接送交通车 ）
10. 小型货车
11. 大型货车
12. 公交大巴（ 包括高速大巴 ）
13. 公交中巴（ 包括高速中巴 ）
14. 火车
15. 其它

出行次数	第 **1** 次出行	第 **2** 次出行	第 **3** 次出行	第 **4** 次出行	第 **5** 次出行
1．出发地点（ 请填写具体的地址、附近著名建筑物		与第 1 次出行的到达地相同	与第 2 次出行的到达地相同	与第 3 次出行的到达地相同	与第 4 次出行的到达地相同
2．出发地的设施代号	[　] 请从设施代号表中选择	[　] 请从设施代号表中选择	[　] 请从设施代号表中选择	[　] 请从设施代号表中选择	[　] 请从设施代号表中选择
3．出发时间	1．上午 2．下午 [　][　] 时	1．上午 2．下午 [　][　] 时	1．上午 2．下午 [　][　] 时	1．上午 2．下午 [　][　] 时	1．上午 2．下午 [　][　] 时
4．到达地点（ 请填写具体的地址、附近著名建筑物					
5．到达地点设施代号	[　] 请从设施代号表中选择	[　] 请从设施代号表中选择	[　] 请从设施代号表中选择	[　] 请从设施代号表中选择	[　] 请从设施代号表中选择
6．到达时间	1．上午 2．下午 [　][　] 时	1．上午 2．下午 [　][　] 时	1．上午 2．下午 [　][　] 时	1．上午 2．下午 [　][　] 时	1．上午 2．下午 [　][　] 时
7．出行目的	[　] 请从出行目的代号表中选择	[　] 请从出行目的代号表中选择	[　] 请从出行目的代号表中选择	[　] 请从出行目的代号表中选择	[　] 请从出行目的代号表中选择
8．到达目的地的 ・交通工具 ・所需时间 ・改换交通工具的地点 请从表中选择	所利用的交通工具 / 所需时间 / 改换交通工具或公交换乘的地点（请填写车站名、附近著名建筑物名称或大地名）	所利用的交通工具 / 所需时间 / 改换交通工具或公交换乘的地点（请填写车站名、附近著名建筑物名称或大地名）	所利用的交通工具 / 所需时间 / 改换交通工具或公交换乘的地点（请填写车站名、附近著名建筑物名称或大地名）	所利用的交通工具 / 所需时间 / 改换交通工具或公交换乘的地点（请填写车站名、附近著名建筑物名称或大地名）	所利用的交通工具 / 所需时间 / 改换交通工具或公交换乘的地点（请填写车站名、附近著名建筑物名称或大地名）
最初使用的交通工具	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分
然后使用的交通工具	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分
然后使用的交通工具	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分
然后使用的交通工具	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分
然后使用的交通工具	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分	[　] [　] 分
・乘公交汽车时的总候车时间	[　] 分	[　] 分	[　] 分	[　] 分	[　] 分
9．此问仅限由使用自备车的人回答 所使用的汽车的所有形式？	1．个人所有的车 2．公司所有的车 3．机关・事业单位所有的车	1．个人所有的车 2．公司所有的车 3．机关・事业单位所有的车	1．个人所有的车 2．公司所有的车 3．机关・事业单位所有的车	1．个人所有的车 2．公司所有的车 3．机关・事业单位所有的车	1．个人所有的车 2．公司所有的车 3．机关・事业单位所有的车

第六次出行起另页填

2 Cordonline Survey

2.1 Survey Objectives

The survey aimed to obtain the number of inside-outside trips made by registered and temporary population inside and outside of the Study Area.

Specifically, it was to count the number of vehicles and make interviews at survey stations set on the major arterial roads crossing the Study Area boundary (cordonline). Vehicles were counted by type and by direction. Drivers of vehicle were interviewed about number of passengers, trip OD, trip purpose, type and volume of goods loaded, etc.

2.2 Survey Coverage

Figure A.2 and Table A.2 show the location of survey stations which were set on the boundary of the Study Area (cordonline). There were 27 stations of which 25 stations were on arterial roads and 2 stations at railway stations (North and South. They are used for intercity transport. Especially, north station is used by a huge number of passengers).

2.3 Survey Method

(1) Traffic Count Survey

Survey Period:24 hours (on a week day: 6AM to 6AM of the next day)

Survey Items: Traffic volume by vehicle type and by direction
Number of railway passengers at ticket gate by direction

Vehicle Classification**:** 12 types

1) Pedestrian
2) Bicycle
3) Tricycle (for hire)
4) Motorcycle
5) Motorized Tricycle (for hire)
6) Passenger Car (less than 6m)
7) Taxi
8) Mini Bus (less than 30 seats, length: 6~9m, with blue number plate)
9) Large Bus (over 30 seats, length: over 9m, with yellow number plate)
10) Mini Truck (less than 1.75 ton of loading capacity)
11) Large Truck (over 1.75 ton of loading capacity)
12) Tractors, other carts

(2) OD Interview Survey

Survey Period: 24 hours (same as the traffic count survey)

Survey Items: OD, number of passengers, trip purpose, type and volume of loaded cargo, etc. Sample vehicles were interviewed by vehicle type.

Vehicle Classification: 12 types (same as the traffic count survey)

The sampling rate was set to be 10-100% in accordance with the traffic volume by vehicle type. The interview to railway passengers was conducted at ticket gates. The sampling rate for railway station was set at around 20%.

Figure A.2 Location of Cordonline Survey Stations

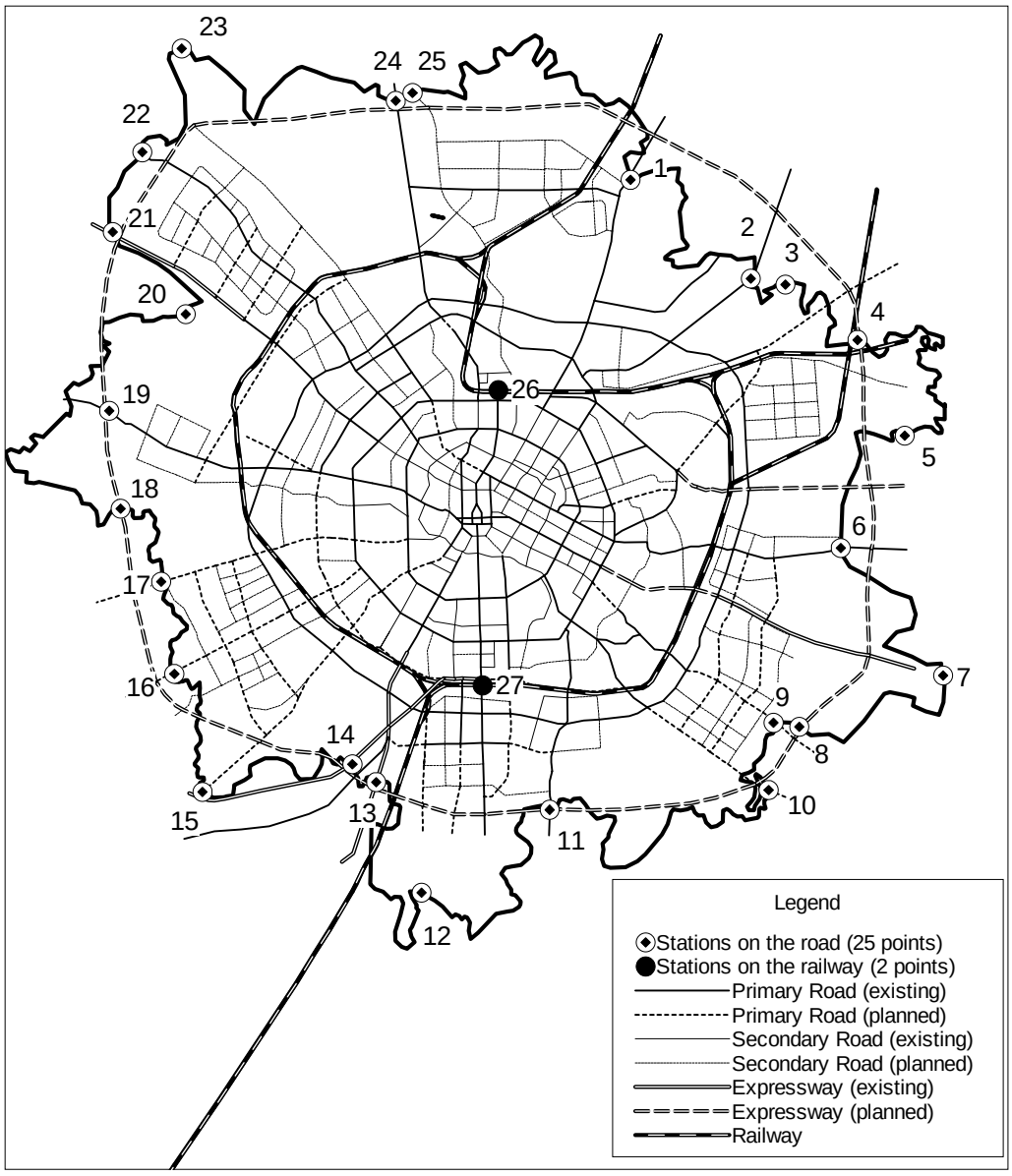


Table A.2 Location of Cordonline Survey Stations

Station (Point)	Place(road name)	Districts	Road Type
C01	Chuan-Shan Highway	Jinniu District	Primary Road
C02	Cheng-Mian Expressway	Chenghua District	Toll Expressway
C03		Chenghua District	Ordinary Road
C04		Chenghua District	Ordinary Road
C05		Chenghua District	Secondary Road
C06		Chenghua District	Ordinary Road
C07	Cheng-Yu Expressway	Chenghua District	Toll Expressway
C08		Jinjiang District	Secondary Road
C09		Jinjiang District	Ordinary Road
C10		Jinjiang District	Ordinary Road
C11	New Cheng-Ren Highway	Jinjiang District	Primary Road
C12		Gaoxin District	Secondary Road
C13	Cheng-Le Expressway	Gaoxin District	Toll Expressway
C14	Dajian Lu	Gaoxin District	Primary Road
C15	Airport Expressway	Gaoxin District	Toll Expressway
C16		Wuhou District	Primary Road
C17		Wuhou District	Secondary Road
C18		Qingyang District	Ordinary Road
C19	Cheng-Wen Highway	Qingyang District	Primary Road
C20		Jinniu District	Ordinary Road
C21	Cheng-Guan Expressway	Jinniu District	Toll Expressway
C22	Old Cheng-Guan Highway	Jinniu District	Primary Road
C23		Jinniu District	Secondary Road
C24	Cheng-Peng Highway	Jinniu District	Primary Road
C25		Jinniu District	Secondary Road
C26	North Railway Station	Jinniu District	Railway
C27	South Railway Station	Gaoxin District	Railway

2.4 Survey Schedule

The cordonline survey was conducted in the following schedule.

Survey Date	Survey Station
July 3	3,4,5,6,8,9,10
July 4	11,12,14,16
July 5	17,18,19,20,21
July 6	22,23,24,25
July 7	2,7,13,15,26,27

2.5 Survey Form

The survey was conducted using the survey forms in the following pages. .

Cordonline Survey Form (for traffic counts)

交通量观测调查

地点 No.: _____ 地点名：_____

方向：自 _____ 至 _____

调查日：2000年_____月_____日 天气：_____

调查员姓名：_____

车种 / 时间					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					

调查表1 交通量观测调查表

Cordonline Survey Form (for OD interview to the vehicles except bus)

Form A 路边OD采访调查 驾驶员采访表 - 个人交通	国际协力事业团 中国四川省成都市公共交通系统整治规划调查

调查地点 No.: _____ 调查地点名: _____

方向: _____ 观测日: 2000年_____月_____日

调查员姓名: _____ 时间: _____

天气: _____

	1	2	3
1.车型 1. 步行者 7. 出租车 2. 自行车 10. 小型卡车 3. 三轮人力车 11. 大型卡车 •拖车 4. 摩托车 12. 拖拉机 5. 机动三轮车 依靠人力、摩托、动 6. 轿车类 物牵引的车辆			
2. 出发地 本次出行的出发地是哪里呢？ (请填写具体的地址或目标物、 有名的建筑物等)			
3. 到达地 本次出行是去哪里呢？ (请填写具体的地址或目标物、 有名的建筑物等)			
4. 移动目的 1. 回自己家 4.私事 2. 去上班地点 5.业务 3. 去上学地点 6.其它			
5. 乘车人数 (含驾驶员)			
6. 乘车定员			
7. 载货种类			
8. 准载重量(ton)			
9. 居住地地址			

調查票2　城市出入口路边OD采访调查　驾驶员采访表 - 个人交通

Cordonline Survey Form (for OD interview to bus drivers)

Form B 路边**OD**采访调查 公共汽车驾驶员采访表	国际协力事业团 中国四川省成都市公共交通系统整治规划调查

调查地点No.: _____ 调查地点名: _____

方向: _____ 调查日: 2000年_____月_____日

调查员姓名: _____ 时间: _____

天气: _____

		1	2	3
1. 车牌号.				
2. 车型 8. 中巴 9. 大巴				
3. 路线番号				
4. 运行路线	1) 出发地 中心站/站亭名			
	2) 到达地 中心站/站亭名			
5. 乘车人数 (含驾驶员)				
6. 定员				

調查票3　城市出入口路边OD采访调查　公共汽车驾驶员采访表

Cordonline Survey Form (for OD interview to bus passengers)

Form C 路边**OD**采访调查 公共汽车乘客采访表	国际协力事业团 中国四川省成都市公共交通系统整治规划调查

调查地点No.: _____ 调查地点名: _____

方向: _____ 调查日: 2000年_____月_____日

调查员姓名: _____ 时间: _____

天气: _____

	1	2	3	4	5	6
1.车牌号.						
2.车型 8. 中巴 9. 大巴						
3.路线番号						
4.出发地 中心站/站亭名 地址 /目标物名 填写有名的建筑物						
5.到达地 中心站/站亭名 地址 /目标物名 填写有名的建筑物						
6.移动目的 1. 回自己家 2. 去上班地点 3. 去上学地点 4. 私事 5. 业务 6. 其它						
7.居住地地址						

調查票4　城市出入口路边OD采访调查　公共汽车乘客采访表

Cordonline Survey Form (for OD interview to railway passengers)

Form D 路边**OD**采访调查 铁路乘客采访表	国际协力事业团 中国四川省成都市公共交通系统整治规划调查

调查地点No.: _____ 调查地点名: _____

方向: _____ 调查日: 2000年_____月_____日

调查员姓名: _____ 时间: _____

天气: _____

	1	2	3	4	5	6
1.出发地 本次出行的出发地在哪里?(请填写具体的地址、目标物、有名的建筑物或列车站名/巴士站亭名)						
2.到达地 本次出行的到达地在哪里?(请填写具体的地址、目标物、有名的建筑物或列车站名/巴士站亭名)						
3.移动目的 1. 回自己家 2. 去上班地点 3. 去上学地点 4.私事 5.业务 6.其它						
4.居住地地址						

調查票5　城市出入口路边OD采访调查　铁路乘客采访表

3 Screenline Survey

3.1 Survey Objectives

The survey aimed to count traffic volume of major arterial roads crossing the screenline set to divide the Study Area into several sub-areas based on the zoning system. The results is used for the calibration of person trip OD matrices produced by the person trip survey in terms of the number of person trips and vehicle traffic volume. The accurate OD matrices are prepared as the basis for the planning.

The traffic volume by vehicle type and by directions was counted manually. In addition the number of passengers was counted for selected sample vehicles by observation.

3.2 Survey Coverage

The screenline was set to divide the Study Area into four sub-areas as crisscross from north to south and from east to west. There were 34 survey stations shown in Table A.3.

3.3 Survey Method

(1) Traffic Count Survey

Survey Period:17 stations: 24 hours (on a week day: 6AM to 6AM of the next day)

17 stations: 16 hours (on a week day: 6AM to 10PM)

Survey Items: Traffic volume by vehicle type and by direction

Vehicle Classification**:** 12 types

1) Pedestrian
2) Bicycle
3) Tricycle (for hire)
4) Motorcycle
5) Motorized Tricycle (for hire)
6) Passenger Car (less than 6m)
7) Taxi
8) Mini Bus (less than 30 seats, length: 6~9m, with blue number plate)
9) Large Bus (over 30 seats, length: over 9m, with yellow number plate)
10) Mini Truck (less than 1.75 ton of loading capacity)
11) Large Truck (over 1.75 ton of loading capacity)
12) Tractors, other carts

(2) Survey on Number of Passengers

Survey Period: 16 stations: 24 hours (on a week day: 6AM to 6AM of the next day)
17 stations: 16 hours (on a week day: 6AM to 10PM)

Survey Items: Number of passengers inside by vehicle type and by direction. Sample vehicles were selected by about 20-100% by vehicle type in accordance with the traffic volume.

Vehicle Classification: 10 types

1) Tricycle (for hire)
2) Motorcycle
3) Motorized Tricycle (for hire)
4) Passenger Car (less than 6m)
5) Taxi
6) Mini Bus (less than 30 seats, length: 6~9m, with blue number plate)
7) Large Bus (over 30 seats, length: over 9m, with yellow number plate)
8) Mini Truck (less than 1.75 ton of loading capacity)
9) Large Truck (over 1.75 ton of loading capacity)
10) Tractors, other carts

Table A.3 Location of Screenline Survey Stations

No.	Location（ Road Bridge ）	Districts	Survey
S01	Jinfu Lu	Jinniu District	16
S02	Section2 of the 2nd Ring Road North	Jinniu District	24
S03	Section2 of the 1st Ring Road North (Xibei Qiao)	Jinniu District	24
S04	Wuding Lu	Jiniu,Qingyang District	16
S05	Renmin Bei-Lu Yi-Duan	Jiniu,Qingyang District	24
S06	Jiefang Lu Er-Duan (Beimen Da-Qiao)	Jiniu,Qingyang District	24
S07	Ma'an Nan-Lu (Taishen Qiao)	Jiniu,Qingyang District	16
S08	Fuqing Lu Yi-Duan (Xinglu Qiao)	Jiniu,Qingyang District	16
S09	Sanhuaishu Lu (Xinhua Qiao)	Jingjiang, Chenghua District	24
S10	Yushuang Lu (Xin Dongmen Da-Qiao)	Jingjiang, Chenghua District	16
S11	Dacisi Lu	Jingjiang, Chenghua District	24
S12	Xia Dong Da-Jie (Dongmen Da-Qiao)	Jingjiang District	24
S13	Binjiang Dong-Lu (Anshun Qiao)	Jinjiang, Gaoxin District	16
S14	Section5 of the 1st Ring Road East (Jiuyan Qiao)	Jinjiang, Gaoxin District	24
S15	Section1 of the 2nd Ring Road North	Jinjiang, Gaoxin District	24
S16		Jinjiang, Gaoxin District	16
S17	Xinghui Qiao	Qingyang, Jinniu District	16
S18	Chunfeng Qiao	Qingyang, Jinniu District	16
S19		Qingyang District	16
S20		Qingyang District	16

S21		Qingyang, Wuhou District	16
S22	Section1 of the 1st Ring Road West (Qingshuihe	Qingyang District	24
S23	2nd Ring Road West (Baihuatan Qiao)	Qingyang District	24
S24	Dashi Dong-Lu	Qingyang, Wuhou District	16
S25	Hongyan Lu	Qingyang, Wuhou District	24
S26	Xia Nan Da-Jie (Lao Nanmen Da-Qiao)	Qingyang, Wuhou District	24
S27	Renmin Nan-Lu San-Duan (Jinjiang Qiao)	Qingyang, Jinjiang District	24
S28	Hongxing Lu Si-Duan (Xin Nanmen Da-Qiao)	Qingyang, Jinjiang District	24
S29	Shier Bei-Jie	Qingyang, Jinjiang District	16
S30	Mengzhuiwan Nan-Jie	Chenghua District	16
S31	Section3 of the 1st Ring Road East	Chenghua District	16
S32	Shuanglin Zhong-Heng-Jie	Chenghua District	16
S33	Section3 of the 2nd Ring Road East	Chenghua District	24
S34	Yangliudian Bei-Lu	Chenghua District	16

3.4 Survey Schedule

The screenline survey was conducted from June 26 to 29, 2000.

3.5 Survey Form

The survey was conducted using the survey forms in the following pages.

Screenline Survey Form (for traffic count)

交通量观测调查

地点 No.: _____ 地点名：_____

方向：自 _____ 至 _____

调查日：2000年_____月_____日 天气：_____

调查员姓名：_____

车种 / 时间					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					
☐ AM ☐ PM					

调查表1 交通量观测调查表

Screenline Survey Form (for number of passenger count)

乘车人数观测调查

调查地点No. : ____________ 调查地点名 : ____________

方向 : 自 ____________ 至 ____________

调查日 :2000年 月 日 天气 : ____________ 调查员姓名 : ____________

时间: - AM ☐ PM ☐

車种:		車种:		車种:		車种:	
NO.	乘车人数	NO.	乘车人数	NO.	乘车人数	NO.	乘车人数
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
10		10		10		10	
11		11		11		11	
12		12		12		12	
13		13		13		13	
14		14		14		14	
15		15		15		15	
16		16		16		16	
17		17		17		17	
18		18		18		18	
19		19		19		19	
20		20		20		20	
計		計		計		計	

车种:		车种:		车种:		车种:	
NO.	乘车人数	NO.	乘车人数	NO.	乘车人数	NO.	乘车人数
1		1		1		1	
2		2		2		2	
3		3		3		3	
4		4		4		4	
5		5		5		5	
6		6		6		6	
7		7		7		7	
8		8		8		8	
9		9		9		9	
10		10		10		10	
11		11		11		11	
12		12		12		12	
13		13		13		13	
14		14		14		14	
15		15		15		15	
16		16		16		16	
17		17		17		17	
18		18		18		18	
19		19		19		19	
20		20		20		20	
计		计		计		计	

调查表2 乘车人数观测调查表

4 Travel Speed Survey

4.1 Survey Objectives

The survey aimed to identify the service level of roads such as the level of traffic congestions and bottlenecks by area and by road section.

Travel speeds of bicycle, car and bus were measured by time period through riding the vehicle. The survey routes were selected for this survey from the existing bus routes.

4.2 Survey Routes

Figure A.3 and Table A.4 shows the survey routes. 13 bus routes were selected from the existing bus routes. The criteria in selection of survey route were set to cover the roads within 2nd-Ring Road as much as possible avoiding the overlap.

4.3 General

(1) Survey Mode: bicycle, car and bus

(2) Survey Period and Samples

- Morning Peak Hours: 7:00-9:00

- Day time Off Peak Hours: 11:00-13:00

- Evening Peak Hours: 17:00~19:00

One or two samples (1 sample = 1 round trip) were obtained for each time period by vehicle type.

(3) Survey Items

The major intersections, bus stops and bridges were set as the check points. The surveyor with survey forms and a watch rided the designated vehicle and recorded the time of departure and arrival at each check point. If the vehicle stopped between them, the time of stop and restart and reason of the stop were recorded.

Figure A.3 Travel Speed Survey Routes

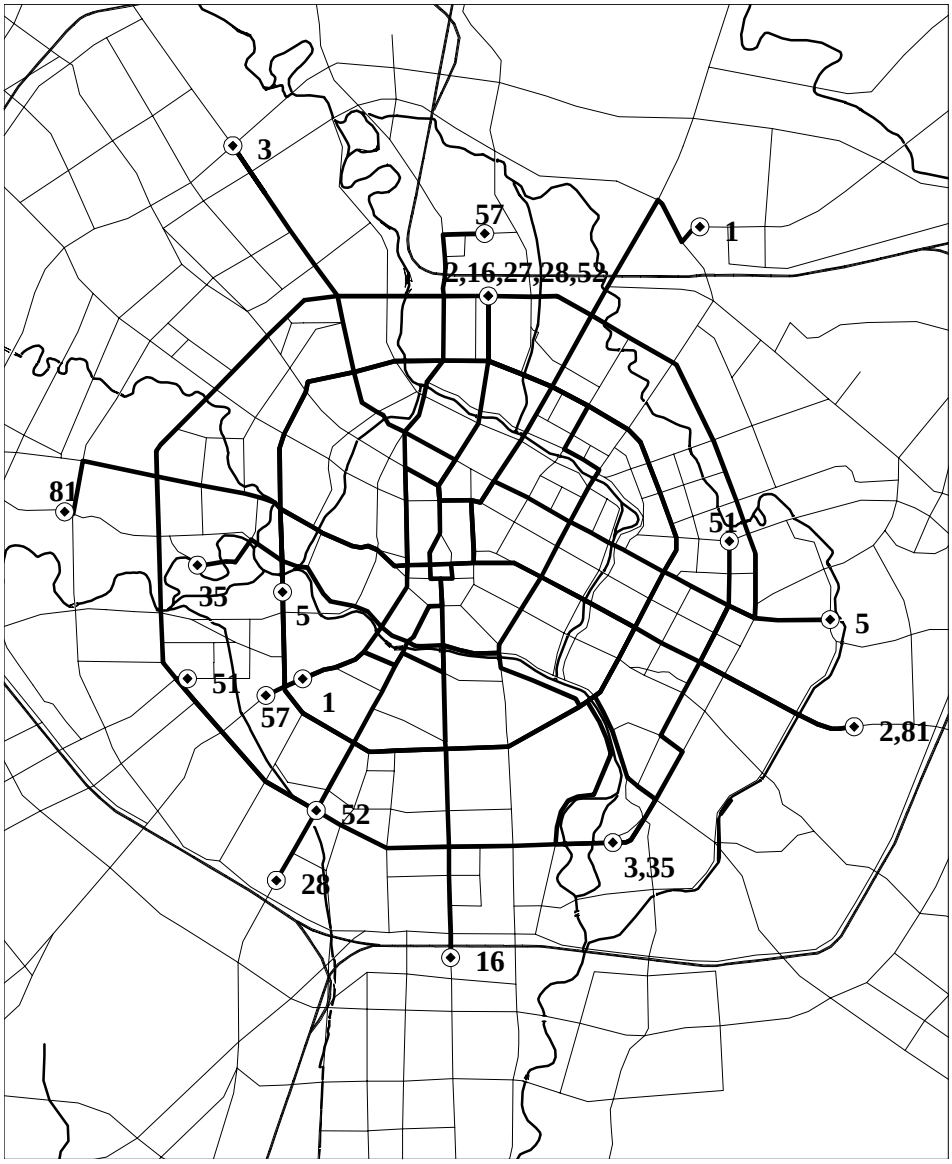


Table A.4 Travel Speed Survey Routes

Route No.	Bus Route No.	Route	Route Length (km)
1	1	Qinglongchang-Wuhouci	10.8
2	2	North Railway Station –Wuguiqiao	12.8
3	3	Chengle Bus Terminal－Jiaodaluxi	13.5
4	5	Baihua Bus Terminal - Chengluo Bus Terminal	12.8
5	16	North Railway Station –South Railway Station	11.1
6	25	Baihuatan (Inner Ring Road)	18.0
7	27/34	1st Ring Road	22.4
8	28	North Railway Station －Gaopengzi	13.9
9	35	Chengle Bus Terminal－ Caotangsi	8.1
10	51	Xiaolongqiaolu Beikou－ Hongpailou	12.5
11	52	North Railway Station－ Hongpailou	11.6
12	57	Wukuaishi Bus Terminal－ Gaoshengqiao Bus Terminal	9.3
13	81	Jinsha West Bus Terminal－ Wuguiqiao Bus Terminal	13.5

4.4 Schedule

The survey was conducted in the following schedule.

Survey Date and Time	Surveyed Lines	Surveyed Vehicles
1st Day (July 7) 7:00-9:00 11:00-13:00 17:00-19:00	1/2/3/ 5/16/27/34/ 28/35/51/ 52/57/81	Bus
2nd Day (July 18) 7:00-9:00 11:00-13:00 17:00-19:00	1/2/3/ 5/16/27/34/ 28/35/51/ 52/57/81	Car, Bicycle
3rd Day (July 19) 7:00-9:00 11:00-13:00 17:00-19:00	1/2/3/ 5/16/27/34/ 28/35/51/ 52/57/81	Bus

4.5 Form

The survey was conducted using the survey forms in the following pages.

Travel Speed Survey Form

旅行速度调查表

路线名：_____ 调查者：_____□ 早晨高峰期
方　向：自_____ 至_____ □ 中午高峰期
抽样No.：_____ 调查日：_____□ 傍晚高峰期

交叉点 •车站名	通过时间	停止1			停止2			停止3	
		原因	停止时刻	出发时刻	原因	停止时刻	出发时刻	原因	停止时刻
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.									
20.									

停止原因记号

LT-左转车辆	**BP-**公共汽车停靠	**SS-**根据标识的停止
RT-右转车辆	**S1-**信号	**T-**交通堵塞
PED-步行者 •自行车	**S2-**交通规则	**TA-**交通事故
PC-驻停车车辆	**MB-**超车车辆	**OT-**其他(具体记录

调查表**1**　旅行速度调查表

5 Intersection Traffic Survey

5.1 Survey Objectives

This survey aimed to know the traffic condition at intersections. The in- and out-flow traffic volumes at the selected intersections were counted by vehicle type in two peak hours in the morning and evening.

5.2 Survey Intersections

20 intersections of major roads with large traffic volume were selected for the survey (Figure A.4 and Table A.5).

5.3 Methodology

(1) Survey Period

Morning Peak Hours: 7:00-11:00

Evening Peak Hours: 16:00-20:00

(2) Vehicle Classification: 12 types

1) Pedestrian
2) Bicycle
3) Tricycle (for hire)
4) Motorcycle
5) Motorized Tricycle (for hire)
6) Passenger Car (less than 6m)
7) Taxi
8) Mini Bus (less than 30 seats, length: 6~9m, with blue number plate)
9) Large Bus (over 30 seats, length: over 9m, with yellow number plate)
10) Mini Truck (less than 1.75 ton of loading capacity)
11) Large Truck (over 1.75 ton of loading capacity)
12) Tractors, other carts

(3) Survey Items

In- and out-flow traffic volume at intersection was counted by vehicle type and by direction, and was recorded every 10 minutes. There are, for example, 12 directions for four-legs intersection. The survey was conducted in two time periods of morning and evening peak hours.

Figure A.4 Location of Intersection Traffic Count Survey Stations

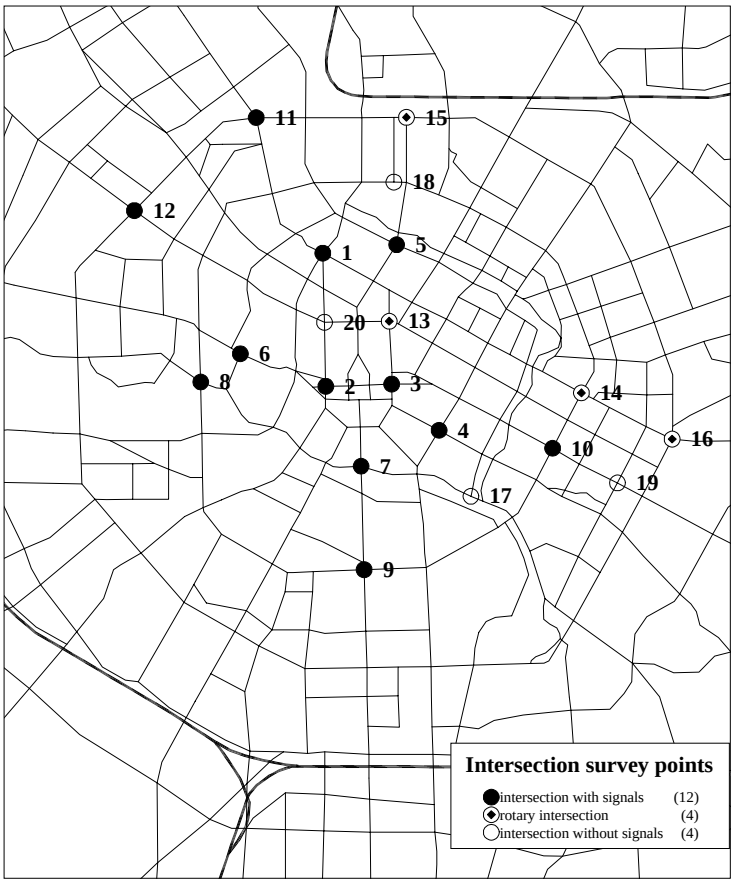


Table A.5 the Sites at Intersections

Location No.	Road Names (Number of Lanes)	Control Type (No. of legs)	Area
1	Wanhe Lu(4)－Jianghan Lu(4)	Signalized (5)	Inner Ring Road (inside)
2	Renmin Xi-Lu(4)－Dongchenggen Jie(4)	Signalized (4)	Inner Ring Road (inside)
3	Renmin Dong-Lu（4）－Shuncheng Da-Jie(6)	Signalized (4)	Inner Ring Road (inside)
4	Hongxing Lu(4)－Dong Da-Jie(2)	Signalized (4)	Inner Ring Road(inside)
5	Renmin Zhong-Lu(6)－Taian Xi-Lu(4)	Signalized (4)	Inner Ring Road (up)
6	Qintai Lu(2)－Tonghuimen Lu(4)	Signalized (3)	Inner Ring Road (up)
7	Renmin Nan-Lu(6)－Binjiang Lu (4)	Signalized (4)	Inner Ring Road (up)
8	1st Ring Road(4)－Qingyang Jie (4)	Signalized (4)	1st Ring Road (up)
9	1st Ring Road(4)－Renmin Nan-Lu(6)	Signalized (4)	1st Ring Road (up)
10	1st Ring Road(4)－ Dongfeng Lu (4)	Signalized (4)	1st Ring Road (up)
11	2nd Ring Road(4)－ Shawan Lu (4)	Signalized (4)	2nd Ring Road (up)
12	2nd Ring Road(6)－ Yangshi Jie(4)	Signalized (4)	2nd Ring Road(up)
13	Shuncheng Da-Jie(4)－ Xi-Yulong Jie(5)	Signalized (4)	Inner Ring Road (inside)
14	1st Ring Road(4)－Shuanglin Lu(4)	Signalized (4)	1st Ring Road (up)
15	2nd Ring Road(4)－Renmin Nan-Lu(4)	Signalized (3)	2nd Ring Road (up)
16	2nd Ring Road(4)－ Shuanglin Lu (4)	Signalized (4)	2nd Ring Road (up)
17	Inner Ring Road(4)－Binjiang Dong-Lu(4)	Not Signalized (3)	Inner Ring Road (up)
18	1st Ring Road(4)－Beizhan Xi-Yi-Lu(2)	Not Signalized (3)	1st Ring Road (up)
19	Yangshi Jie(4)－Dongchenggen Jie(4)	Not Signalized (4)	2nd Ring Road (inside)
20	Shuanglin Lu(2)－Jinghua Lu(5)	Not Signalized (4)	Inner Ring Road (inside)

5.4 Survey Schedule

The survey was conducted in the following schedule.

Survey Day	Survey Date	Intersections
1st Day	July 11	2, 8, 11, 20
2nd Day	July 12	1, 6, 7, 18
3rd Day	July 13	3, 4, 5, 9
4th Day	July 14	10, 16, 17, 19
5th Day	July 15	12, 13, 14, 15

5.5 Survey Form

The survey was conducted using the survey forms in the following pages.

Intersection Traffic Volume Count Survey Form

交叉点交通量调查表

地点番号		调查日	
地点名		天气	
监督者		调查者	

流入方向		调查时间	从　　点到　　点止

车　种	流出方向	计	流出方向	计	流出方向	计

6 Parking Survey

6.1 Survey Objectives

This survey aimed to obtain the information on service level and supply of parking by area for of bicycles and cars. This survey was of small-scale focusing on selected areas.

The bicycle parking on sidewalk and street along narrow roads influence the traffic condition of Chengdu City. The regulation of those parking activities has a direct relation to the demand of bus system. It is very important to know the influences on the candidate measures for improvement of bus system. This is also to be a basis for planning of ride-and-ride system (bicycle + bus, bicycle and car).

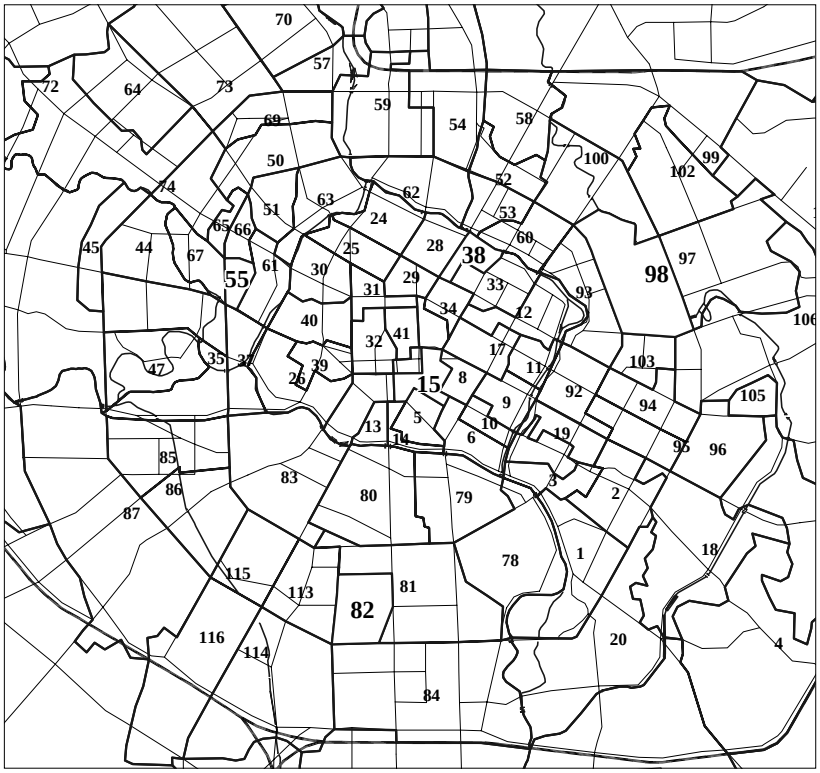
6.2 Survey Zones

Among the traffic zones used in the person trip survey, 5 zones were selected for the survey. They are located in the area within 2nd-Ring Road having different land use characteristics (Figure A.5 and Table A.6).

Table A.6 Survey Zones

No.	Zone No.	Zone Name	Land Use	Population	Remarks
1	15	Yanshikou	Commercial, Offices	12,221	Center of City
2	38	Beidajie	Commercial, Residential	13,264	Inner Ring Road
3	55	Qingyangbeilu	Educational, Residential	10,998	1st Ring Road
4	82	Yulin	Public and Research Facilities	32,320	2nd Ring Road
5	98	Jianshelu B	Industrial	25,768	2nd Ring Road

Figure A.5 Survey Zones



6.3 Survey Method

The surveyors visited the selected zones and recorded the following information related to the parking.

(1) Parking Type

Management: for public (government), for visitors and customers (commercial buildings and restaurants), for private (factories and residence)

Type: on-sidewalk, on-street, off-street (ground), building (high-rise and basement)

Fare: free, charged

Capacity: number of parking spaces, actual number of parked cars and bicycles

(2) Parking Facility Plan

6.4 Survey Schedule

The survey was conducted from July 25 to August 2, 2000.

6.5 Survey Form

The survey was conducted using the survey form in the following pages.

Parking Survey Form

停车场、自行车停放点调查表

停车场、自行车停放点调查表

交通小区番号:_____　　交通小区名:_____

地　区　名:_____　　调查员:_____

调查时刻_____时_____分　　调查日:　　2000 年___月_____日

种类	□自行车停放点　　□停车场
管理	□公共　　□客户专用　　□私用
形状	□人行道上　□路外平面　□路外立体 □道路上　□路外地下
费用	□收费 _____元/回 _____元/小时 _____元/日 □免费
停车数量	最大容纳数量:_____台 实际停车、自行车停放数:_____台
(概略平面图)	

调查表 1　停车场、自行车停放点调查表

7 Bus Passenger Interview Survey

7.1 Survey Objectives

This survey aimed to know the people's perception on the current condition and the future direction of development of public transport system such as bus and subway. This survey was composed of 1) bus passenger perception interview survey and 2) survey on willingness-to-use of new bus system. The former was to know the complaints and wishes of present bus users and the future directions of bus system improvement. The latter was an SP (stated preference) survey to know the possibility of conversion from the other modes to bus in different conditions of service level of bus transport. The targets of the latter are not only bus users but also users of cars and bicycles.

7.2 Survey Coverage

This survey is conducted in sample basis. The survey stations are selected from the bus terminals, bus stops, parking, gasoline filling stations (Figure A.6 and Table A.7).

7.3 Survey Method

(1) Bus Passenger Perception Interview Survey

Number of stations:7 sites (3 bus terminal and 4 bus stops)

Number of samples: 700 samples (100 samples x 7 stations)

Survey Method: direct interview to bus users

Survey Items: personal data (age, sex, income, address etc.)

trip data (OD, trip purpose, fare, access mode etc.)

perception on existing infrastructure/facilities (roads, bus terminals and etc.)

perception on bus services (speed, fare, comfort etc.)

(2) Survey on Willingness-to-use of New Bus System

Number of stations:18 sites

3 bus terminals and 4 bus stops (for bus users)

7 bicycle parkings (for bicycle users)

2 car parkings and 2 gasoline filling stations (for car users)

Number of samples:1,800 samples (100 samples x 18 stations)

Survey Method: direct interview to bus, bicycle and car users

Survey Items: personal data (age, sex, income, address and etc.)

trip data (OD, trip purpose, fare, access mode etc.)

willingness-to-use of new bus system in different conditions of fares, travel time and routes

Figure A.6 Location of Survey Stations

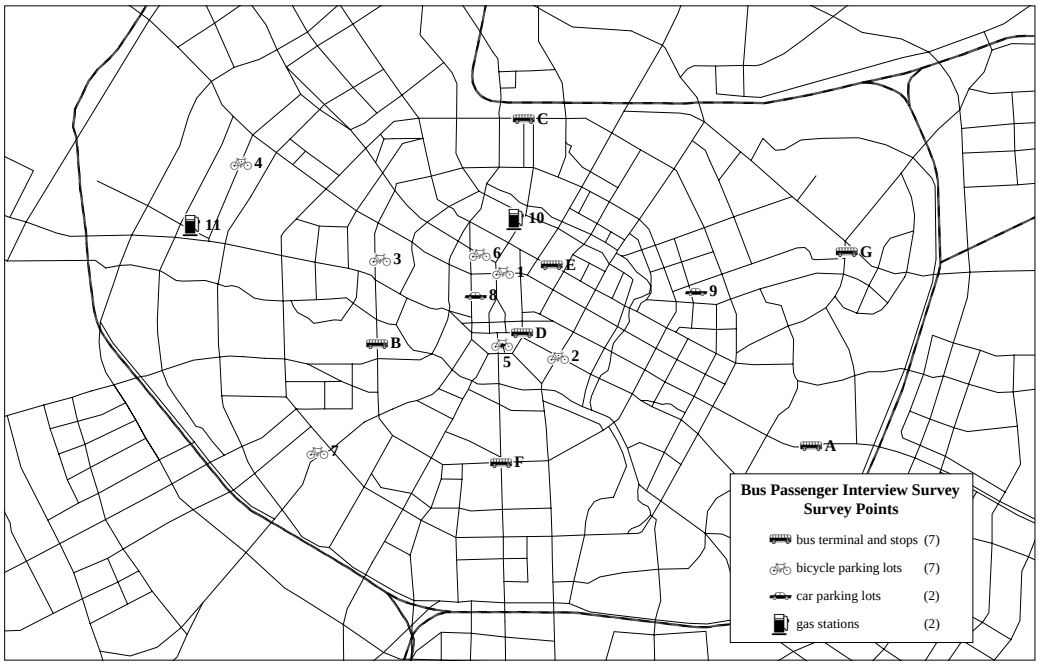


Table A.7 Location of Survey Stations

	Bus Passenger Perception Interview Survey	Survey on willingness-to-pay to new Bus System
Bus Terminals (3)	A. Wuguiqiao Bus Terminal B. Baihuazhongxin Bus Terminal C. North Center Bus Terminal	
Bus Stops (4)	D. Jincheng Yishu-Gong, F. Sheng-Jinganyuan E. Deshenglu, Deshenglu (West), Chengdu-Luguan, G. Geology University	
Parking Places for Bicycle (7)	-	1.Parking (1): Waimao-Dasha 2.Parking (2): Ito-Yokado 3.Bicycle parking in building (Center): Qingyang-Xiaoqu 4.Bicycle parking in building (suburban): Huangzhong-Xiaoqu 5.Charged public bicycle parking: Baihuo-Dalou 6.Free public bicycle parking (Center): Babojie-jialefu 7.Free public bicycle parking (suburban): Bayi Jiajucheng
Parking Places (2)	-	8.Park: for Public Use Department 9.Public park: Supermarket Haoyouduo on Jianshe Lu
Gas Stations (2)	-	10.Gas station at 1st Ring Road: Bayiguke Gas Station 11.Gas station outside 2nd Ring Road: Xiejiaci Gas Station by Cheng-Wen Highway

7.4 Survey Schedule

The bus passenger perception interview survey was conducted from July 19 to 22, 2000. The survey on willingness-to-use of new bus system was implemented from July 25 to 26, 2000.

7.5 Form

The survey was conducted using the survey forms in the following pages.

Bus Passenger Perception Interview Survey Form

调查日 ： _____月_____日　　时刻： _____：_____　　调查员： _____

1. 性别	□男 □女	2. 年龄 □	3. 职业(从表中选择) □
4. 拥有的自行车	□ 自己所有	□ 家庭所有	□ 没有
5. 拥有的汽车	□ 自己所有	□ 家庭所有	□ 没有
6. 居住地	(记入地址)		□
7. 勤务•通学地	(记入地址)		□
8. 现在移动的最终目的地： (记入地址)			□
9. 现在移动的出发地： (记入地址)			□
10. 现在移动的目的(从表中选择)			□
11. 到达这里使用的交通工具(从表中选择)			□
12. 从这里到目的地将要使用何种交通工具(从表中选择)			□
13. 利用的公交车路线：		1)到此为止所乘坐的公交车路线	□
		2)从此以后要乘坐的公交车路线	□
14. 在本车站的等待时间			□ 分
15. 本车站•公交总站设施的问题是什么 (从表中选择2项)			□ □
16. 1周内大约几天利用公交车：		1)通勤•上学	□ 日/周
		2)因私目的	□ 日/周
		3)业务目的	□ 日/周

17. 对公共汽车的一般性评价

1) 路线数	□ 很好	□ 好	□ 普通	□ 坏	□ 很坏
2) 运行频率	□ 很好	□ 好	□ 普通	□ 坏	□ 很坏
3) 速度	□ 很好	□ 好	□ 普通	□ 坏	□ 很坏
4) 车费	□ 很好	□ 好	□ 普通	□ 坏	□ 很坏
5) 运行的定时性	□ 很好	□ 好	□ 普通	□ 坏	□ 很坏
6) 车内的舒适性	□ 很好	□ 好	□ 普通	□ 坏	□ 很坏
7) 车内的安全性	□ 很好	□ 好	□ 普通	□ 坏	□ 很坏
8) 服务态度	□ 很好	□ 好	□ 普通	□ 坏	□ 很坏

18. 在上述项目中，请列举最为重要的两项 □ □

3. 职业

1. 工人
2. 农牧渔从业人员
3. 公司职员
4. 政府机关工作人员
5. 商业人员
6. 教师
7. 军人
8. 专业技术人员
9. 个体经营者
10. 服务行业人员
11. 小中学生
12. 学生(高中生以上)
13. 家庭主妇女
14. 求职员
15. 其他

10. 移动目的

1. 到工作单位•学校
2. 到因私目的地
3. 到业务目的地
4. 从工作单位•学校回家
5. 从因私目的地回家
6. 从业务目的地回家
7. 从业务目的地回公司

11.12. 交通工具

1. 徒步
2. 自行车
3. 三轮人力车
4. 摩托车
5. 三轮摩托车
6. 出租车
7. 轿车类
8. 中巴路线车
9. 大巴路线车
10. 火车
11. 其他

15. 车站•公交总站问题

1. 路线间的换乘困难
2. 运行状况(运行方向、时刻等)不足
3. 车站等待设施(椅子、雨棚等)破损
4. 周边道路脏乱差
5. 车站、总站内混乱
6. 步行环境差
7. 脏
8. 无安全感
9. 其他( )

Form of the Survey on Willingness-to-use of New Bus System

新公交系统利用意向调查

调查地点：_____ 监督员：_____

调查日 ：_____月_____日 时刻：_____：_____ 调查员：_____

调查对象：□公交车利用者 □自行车利用者 □ 汽车利用者

1. 性别	□男 □女	2. 年龄 □	3. 职业（从表中选择） □
4. 拥有的自行车	□自己所有	□家庭所有	□没有
5. 拥有的汽车	□自己所有	□家庭所有	□没有
6. 居住地	（记入地址）		□
7. 勤务•通学地	（记入地址）		□
8. 现在移动的最终目的地： （记入地址）			□
9. 现在移动的出发地： （记入地址）			□
10. 现在移动的目的（从表中选择）			□
11. 到达这里所需时间			□ 分
12. 使用现在的交通工具的原因（从表中选择2项）			□ □
13. 现在移动不采用公交车的原因（从表中选择2项） （仅利用自行车•汽车的人员）			□ □
14. 1周内大约几天利用现在的交通工具：		1)通勤•上学	□ 日/周
		2)因私目的	□ 日/周
		3)业务目的	□ 日/周

针对当前的移动为比较对象，下述问题请利用自行车•汽车的人员的回答

15. 解决了公交车车内的混乱，有空调的舒适的公交车	□利用公交车 □利用现在的工具
16. 增加车站和路线，到车站的距离缩短一半的话	□利用公交车 □利用现在的工具
17. 包括等待、换乘时间的总共所需时间缩短到比现在所利用的交通手段要短的话	□利用公交车 □利用现在的工具
18. 设置专用公交车道，公交车定时性提高的话	□利用公交车 □利用现在的工具
19. 上述所有的改善都完成（车费不变）	□利用公交车 □利用现在的工具
20. 上述所有的改善都完成（车费增加到2倍）	□利用公交车 □利用现在的工具

3. 职业	10. 移动目的	12. 利用现在的交通手段的原因	13. 不利用公交车的原因
1. 工人 **2.** 农牧渔从业人员 **3.** 公司职员 **4.** 政府机关工作人员 **5.** 商业人员 **6.** 教师 **7.** 军人 **8.** 专业技术人员 **9.** 个体经营者 **10.** 服务行业人员 **11.** 小中学生 **12.**学生（高中生以上） **13.**家庭主妇女 **14.**求职员 **15.**其他	**1.** 到工作单位•学校 **2.** 到因私目的地 **3.** 到业务目的地 **4.** 从工作单位•学校回家 **5.** 从因私目的地回家 **6.** 从业务目的地回家 **7.** 从业务目的地回公司	1. 花费时间短 2. 费用低 3. 不需换车 4. 步行距离短 5. 没有其他可利用的交通手段 6. 其他的交通手段利用困难 7. 不受天气影响 8. 快捷舒适 9. 安全 10. 其他（ ）	1. 公交车无法到达的距离 2. 附近没有车站 3. 必须换车 4. 运行频率低 5. 所需时间长 6. 费用高 7. 定时性差 8. 末班车太早 9. 公交车车内混乱 10. 没有空调 11. 讨厌公交车 12. 其他（ ）

Appendix B

GEOLOGY OF CHENGDU

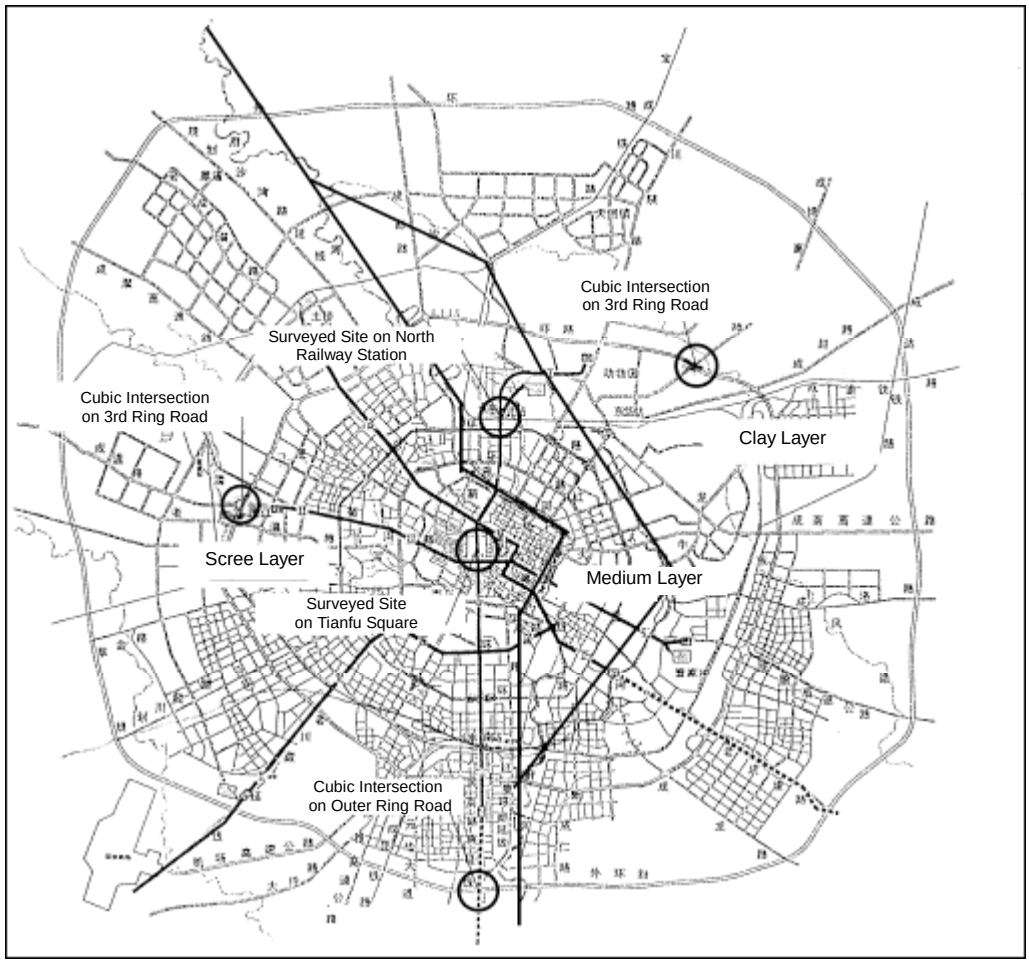
Appendix B

GEOLOGY OF CHENGDU

1. OUTLINE

In Chengdu, geological survey results are available at 5 locations shown in Figure B.1. They are scattered in the north (North Station), center (Tianfu Square), south (Outer Ring Road), east (3rd Ring road) and west (3rd Ring Road). The outline of geology at these locations and their boring logs are shown below:

Figure B.1 Geological Survey Locations



1) North (North Station)

The geological structure is, from the surface, reclaimed soil of 1.8m, Quaternary latter diluvium glacial deposit of 20.6m, and Quaternary middle diluvium glacial deposit. The second layer that can be a foundation for buildings and structures comprises strata of clay (2.8m), alternation of strata of sand and boulder stone (3.3m), and dense or very dense boulder stone (14.5m). The boulder stone is slightly or medium weathered (partially very

slightly) and its diameter is 5 to 8 cm with a maximum of 12cm.

2) Center (Tianfu Square)

The geological structure is somewhat complex at this location; from the surface, reclaimed soil of 6.8m, Quaternary alluvium alternation of strata of boulder stone deposit and clay of 6.3m, Quaternary latter diluvium glacial boulder stone deposit of 6.7m, Quaternary mid-early diluvium glacial boulder stone deposit of 6.1m and Mesozoic Cretaceous latter cretaceous medium-weathered mud rock (Guankou Group). The major difference from North Station is the existence of Mesozoic mud rock. The thickness of the Quaternary latter diluvium very dense glacial boulder deposit, which can be the foundation of buildings and structures, is 14.2m. The features of this boulder stone is the same as that seen in the north.

3) South (Outer Ring Road)

The geological structure comprises reclaimed soil of 1.2m, Quaternary latter diluvium glacial clay deposit of 6.9m, Quaternary latter diluvium medium-dense boulder stone of 7.2m and Mesozoic Cretaceous latter cretaceous medium-weathered mud rock (Guankou Group).

The thickness of the Quaternary latter diluvium glacial dense and very dense boulder stone to be used as the building foundation is 8.1m. The boulder stones included in this layer is slightly or medium weathered (partially very slightly), and its diameter is 4-8cm with a maximum at 15cm. The mudstone layer is about 10m higher than in Tian Fu Square.

4) East (3rd Ring Road)

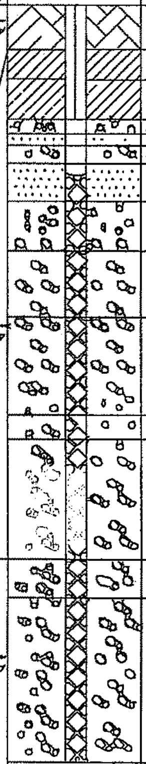
Reclaimed soil of 0.6m, Quaternary mid-early diluvium glacial clay deposit and Mesozoic Cretaceous mudstone (slightly weathered) are the geology of this location. Upper clay layer is hard and suitable as building foundation.

5) West (3rd Ring Road)

Reclaimed soil of 2.0-3.0m, Quaternary alluvium clay of 1.5m and Quaternary latter diluvium boulder stone are the geological structure. The thickness of boulder stone layer is more than 60m. Its shallower part can be used as building foundation.

Drilling Hole Log (Chengdu North Station)

Boring No,	Zn-CD-5	Location	distance / cordinate	NK2-048 / x=23031.80m y=19530.00m	GROUND ELEVATION	507.74m	DEPTH	30.50m	borehole angle	90 deg	date of beginning	1993.10.16	date of end	1993.10.18

LAYER (ERA / PERIOD / AGE / GROUP / LAYER / LEGEND)	GRAPHIC SCALE 1:200	DEPTH / ELEVATION (m)	THICK-NESS (m)	DESCRIPTION	Dynamic penetoration test N_{120} (blows/10cm) 10 20 30	ROCK QUALITY DESIGNATION (%)	IN-SITU TEST No. / DEPTH (m)	Soil sampling No. / DEPTH (m)	GROUND WATER LEVEL DEPTH / ELEVATION (m) INITIAL	STILLNESS	Remarks
CENOZOIC / QUATERNARY / ALLUVIUM / RECRAMATION SOIL		1.80 / 585.94	1.80	Reclaimed soil : Various colors. Composed of mixed clay. Structure is rather loose and wet.					7.00 / 500.74	6.80 / 500.94	借用"谈者 4号 孔资料
		3.00 / 584.74	1.20	Clay : Yellow. Containing iron and manganese oxide concretions and stains. Wet.							
		4.60 / 583.14	1.60	Powdery clay : Yellow. Plastic to hard-plastic. Containing iron and manganese oxide stains. Wet.							
LATTER DILUVIUM / GLACIAL DEPOSIT		5.10 / 582.64	0.50	Boulder stone(Q3) : Yellow or grayish yellow. Ingredients of boulder stone are composed of magmatic rocks and alternation rocks. Of a nearly circular shape. Weatherd to a small to medium extent. Small quantities of boulder stones are heavily weatherd. General grain diameter is 5-8cm and the largest one is 12 cm or more. Filled with middle sand, conglomerate and clay of about 15%. Divided into two kinds of subsoil according to density,medium dense or dense. Slightly wet , saturated.							
		5.60 / 582.14	0.50	4.60-5.10m Medium dense boulder stone.							
		6.40 / 500.74	0.80	5.10-5.60m Medium sand							
		7.90 / 499.84	1.50	5.60-6.40m Medium dense boulder stone							
		9.80 / 497.94	1.90	6.40-7.90m Fine sand							
		12.50 / 495.24	2.70	7.90-9.80m very dense boulder stone							
		16.50 / 491.24	4.00	9.80-12.50m Medium dense boulder stone; 12.50-16.50m very dense boulder stone							
		17.50 / 490.24	1.00	16.50-17.50m Medium dense boulder stone							
		22.40 / 485.34	4.90	17.50-22.40m very dense boulder stone							
MIDDLE DILUVIUM / GLACIAL DEPOSIT		24.00 / 489.74	1.60	Boulder stone(Q2) : Gray or greenish gray. Ingredients of boulder stones are composed of magmatic rocks and alternation rocks. Nearly circular shape. The most part is weatherd a little and a little quantity is weatherd to a middle extent. The general grain diameter is 5-8cm and the largest one is 15cm or more. Filled with middle sand and conglomerate of about 10-20%. Divided into two kinds of subsoil according to density to boulder stones. Slightly and medium dense. Saturated. 22.40-24.00m dense boulder stone							
		30.50 / 477.24		24.00-30.50m very dense boulder stone							

Drilling Hole Log (TIAN FU SQUARE)

Boring No,	Zn-CD-20	Location	distance	NK15+215	GROUND ELEVATION	491.30m	DEPTH	30.60m	borehole angle	90 deg	date of beginning	2000.4.15	date of end	2000.4.18
			cordinate	x=10020.00m y=19116.00m										

LAYER						GRAPHIC	DEPTH / ELEVATION (m)	THICK-NESS (m)	DESCRIPTION	Dynamic penetoration test N_{120} (blows/10cm)	ROCK QUALITY DESIGNATION (%)	IN-SITU TEST No, / DEPTH (m)	Soil Sampling No, / DEPTH (m)	GROUND WATER LEVEL DEPTH / ELEVATION (m)		Remarks
ERA	PERIOD	AGE	GROUP	LAYER	LEGEND	SCALE 1:200								INITIAL	STILLNESS	
CENOZOIC	QUATERNARY	ALLUVIUM		REGRAMATION SOIL	Q^{ml}		6.80 / 496.27	6.80	Reclaimed soil : Various colors. Composed of clay in which chipped pieces of bricks and tiles are mixed. Slightly dense,and wet.					7.50 / 495.57	7.30 / 495.77	
				ALLUVIUM DEPOSIT	Q^{al}		9.70 / 493.97	2.90	Boulder stone(Q4) : Yellow or gray. Ingredients of boulder stones are composed of magmatic rock and alternation rocks. Presenting a nearly circular shape and alternation rocks. Presenting a nearly circular shape and weatherd a little. The general grain diameter is 4-7cm and the largest one is 15cm or more. Filled with middle sand conglomerate of about 10-25%. Slightly wet saturated. Medium density. There are two layers;fine sand at depth of 9.70-10.10m and middle sand at depth of 12.00-13.10m.				十(石)-1 7.20-7.35 / 水-1 7.80-7.95			
							10.16 / 492.97	0.40								
							12.00 / 491.87	1.90					十(石)-2 9.90-10.05			
							13.10 / 489.97	1.10								
		LATTER DILUVIUM		GLACIAL DEPOSIT	Q^{gl}_3		14.20 / 488.87	1.10					十(石)-3 12.50-12.65			
							19.80 / 483.27	5.60	Boulder stone(Q3) : Brownish yellow. Ingredients of boulder stones are composed of magmatic rocks and alternation rock. Nearly circular shape. Weatherd to a small to middle extent with a small quantity weatherd a little. The general grain diameter is 5-8cm and the largest one is 12cm or more. Filled with middle sand,conglomerate and clay of about 25%. Divided into two subsoil according to density; medium dense or dense. Saturated. 13.10-14.20m medium dense boulder stone 14.20-19.80m very dense boulder stone				十(石)-4 20.00-20.15			
		MID-EARLY DILUVIUM		GLACIAL DEPOSIT	Q^{gl}_{1-2}		22.70 / 480.37	2.90								
							25.90 / 477.17	3.20	Boulder stone(Q2) : Gray or greenish gray. Ingredients of boulder stones are composed of magmatic rocks and alternation rocks. Nearly circular shape. The most part is weatherd a little and a little quantity is weatherd to a middle extent. The general grain diameter is 5-8cm and the largest one is 15cm or more. Filled with middle sand, conglomerate and clay of about 10-25%. Divided into two subsoil according to slightly density. medium dense or dense. Saturated. 19.80-22.70m very dense boulder stone 22.70-25.90m medium dense boulder stone				十(石)-5-8 26.40-29.35			
	CRETACEOUS	LATTER CRETACEOUS	GUAN KOU		K_2g		27.30 / 475.77	1.40								
							48.10 / 462.97		Mudstone : Purple . pelitic structure, block like structure ,joints and cracks develop. 25.90-27.30m Heavily weatherd mudstone(W3) 27.30-40.10m Medium weatherd mudstone(W2)				十(石)-9 31.00-31.15 / 十(石)-10 32.50-32.65 / 十(石)-11 34.40-34.55 / 十(石)-12-14 36.70-39.25			

Drilling Hole Log (south part of city)

Boring No,	Zn-CD-20	Location	distance / cordinate	NK15+215 / x=10020.00m y=19416.00m	GROUND ELEVATION	491.30m	DEPTH	30.60m	borehole angle	90 deg	date of beginning	2000.4.15	date of end	2000.4.18

LAYER						GRAPHIC	DEPTH / ELEVATION (m)	THICK-NESS (m)	DESCRIPTION	Dynamic penetoration test N_{120} (blows/10cm)	ROCK QUALITY DESIGNATION (%)	IN-SITU TEST No, / DEPTH (m)	Soil sampling No, / DEPTH (m)	GROUND WATER LEVEL DEPTH / ELEVATION (m)		Remarks
ERA	PERIOD	AGE	GROUP	LAYER	LEGEND	SCALE 1:200								INITIAL	STILLNESS	
CENOZOIC	QUATERNARY	ALLUVIUM		REORAMATION SOIL	Q		1.20 / 490.1	1.20	Reclaimed soil : Various colors. Composed of clay in which chipped pieces of bricks and tiles are mixed. Slightly dense and wet.							
							4.80 / 486.5	3.60	Clay : Brownish yellow and hard-plastic. Containing concretions of iron and manganese oxide compounds . Wet.							
							7.60 / 483.7	2.80	Powdery clay : Yellow and hard-plastic. Containing concretions of iron , manganese oxide compounds and calcium . Wet.							
		LATTER DILUVIUM		GLACIER DEPOSIT	Q		8.10 / 483.2	0.50	Middle sand : Brownish yellow . Composed of quarts, feldspar, mica, debris and minerals of dark color . Saturated and slightly dense .				水-1 / 8.00-8.15	7.60 / 483.70	7.50 / 483.60	
							9.80 / 481.50	1.70	Boulder stone(Q3) : Grayish yellow to yellow . Ingredients of cobble stones are composed of magmatic rocks and alternation rocks. Of a neary circular shape. Weatherd to a small to middle extent . A small quantity is weatherd a little. General grain is 4-8cm and the largest one is about 15cm. Filled with middle sand , conglomerate and cohessive soil of about 10-20% and saturated . Divided into two kinds of subsoil according to density, medium dense or dense.							
							15.30 / 476.00	5.50	8.10-9.80m Medium dense boulder stone							
	CRETACEOUS	LATTER CRETACEOUS	GUAN KOU				15.80 / 475.50	0.50	9.80-15.30m very dense boulder stone							
							30.60 / 460.70		Mudstone : Purple. medium thickness layer. pelitic structure , bedded structure , joints and cracks develop. 15.30-15.80m Compeletry weatherd mudstone 15.80-30.60m medium weatherd mudstone				十-(石)-1 / 20.30-20.45 十-(石)-2 / 22.00-22.15 十-(石)-3 / 24.00-24.15 十-(石)-4 / 26.00-26.15 十-(石)-5 / 28.00-28.15 十-(石)-6 / 29.00-29.15			

Drilling Hole Log

Boring No,	2K7-R	Location	MK50+562.607	GROUND ELEVATION	515.63m	DEPTH	29.50m	borehole angle	90 deg	date of beginning	1999.4.20	date of end	1999.4.20

LAYER						Boring log	DEPTH / ELEVATION (m)	Thickness (m)	Dynamic penetoration test N_{120} (blows/10cm)	ROCK QUALITY DESIGNATION (%)	ROCK QUALITY INDEX (%)	Material No, / Depth(m)	Ground water Initial	Depth / Elevation (m) Stillness	DESCRIPTION	Remarks
ERA	PERIOD	AGE	GROUP	LAYER	LEGEND	SCALE 1:200			10 20 30							
CENOZOIC	QUATERNARY	ALLUVIUM		REGRAMATION SOIL			0.60 / 515.03	0.60							(0.0~0.6m) Reclaimed soil : Mainly composed of clay in which a little quantity of chipped pieces of bricks and tiles are mixed. Wet, plastic and gray.	
		Mid-EARY DILUVIUM		GLACIAL DEPOSIT	Q (c)		23.10 / 492.53	22.50				1 / 23.10-23.92			(0.6~23.1m) Low liquid limit soil : Yellow,containing iron and manganese oxide compounds and concretions, and a small quantity of calcium concretions of 2-6cm in grain diameter. Cracks develop and grayish white clay fills in them. Wet and hard plastic.	
MESOZOIC	CRETACEOUS		GUAN KOU ZU				0.60 / 438.13	2.40		17		2 / 24.90-25.80 3 / 26.00-26.67 4 / 27.25-27.45			(23.1~25.5m) Heavily weatherd mudstone : Structure is partly destroyed and structure stratification is not clear. The rock body is divided in pieces by joints cracks. The aggregate can be broken by hand. Husky sound was heard when the mudstone was hit with a hammer. There is a thin layer of completely weatherd mudstone at the top. Purple. (25.5~29.5m) Slightly weatherd mudstone : Structure is not destroyed and structure stratification is clear. The rock body is divided in pieces of cataclastic block by joints cracks,and a little quantity of weatherd matters fill in the cracks. Secondary minerals appear along the stratification surface,and gypsum and small limestone caves are observed partly. Clear sound was heard when the mudstone was hit with a hammer. Stone blocks are hard to be broken up by hits. Purple.	
							0.60 / 486.13	4.00		11						

DRILLING HOLE LOG

Construction No, 99-109 Boring No, 37 Borhole Depth 25.00 m

Location 成都市三环路一期改造临立交桥 Ground Elevation 512 55 m Date of End 1999 10 16

Layer No.	Depth (m)	Thickness (m)	Soil Name	Graphic	Result of TEST (Wp, W, WL; 5 10 15)	m	Remarks
1	1.30	1 30	Mixed Reclamated Soil				Miscellaneous reclaimed soil : Comprised of clay of various colors in which a large quantity of cobble stones to earth and chipped pieces of bricks and tiles are mixed. The upper part is concrete road surface of 28cm in thickness and slightly fine and wet.
2	2 00	0 70	Reclamated Soil			2	1.30
3	2 70	0.70	Clay				Reclaimed soil : Comprised of yellowish gray clay. Containing a small quantity of chipped pieces of bricks. Plastic and wet.
4	3 50	0.80	Loam			4	2.00
10	5.00	1.50	Dense Boulder Stone		+80 ▽		Clay : Yellowish brown. Having stains of iron and manganese oxide compounds. Hard-plastic and wet.
30	6.70	1.70	Very dense Boulder Stone			6	2.70
20	7.70	1 00	Medium dense Boulder Stone			8	Loam : Grayish yellow. Having stains of iron and manganese oxide compounds and calcium concretions. Plastic and wet.
31	11.20	3.50	Very dense Boulder Stone			10	3.50
21	12 40	1 20	Medium dense Boulder Stone			12	Boulder stone : Yellowish gray and gray. Composed of magmatic rocks and alternation rocks.
30	15 80	3.40	Very dense Boulder Stone			14	Nearly circular shape. General grain diameter is 14~18cm and the largest one is 15cm or more, and mixed with a small quantity of shode stones. Fillings are middle sand and a small quantity of conglomerate,and the content is about 15~48%. Weatherd a little. Slightly wet and saturated. Divided into the three kinds of subsoil according to the contents the contents of density of the boulder stones layer and fillings: slightly dense,medium dense and boulder stones.
22	16.70	0 90	Medium dense Boulder Stone			16	
33	25.00	8 30	Very dense Boulder Stone			18	
						20	
						22	
						24	25 00

DRILLING HOLE LOG

Construction No, 99-109 Boring No, 38 Borhole Depth 25 00 m

Location 成都市三门路一利威温路立交桥 Ground Elevation 512 38 m Date of End 1999 10 16

Layer No.	Depth (m)	Thickness (m)	Soil Name	Graphic	N120 (15 30 45)	wp w wL (5 10 15)	e_o	I_L	E_s (MPa)	C (kPa)	φ (度)	I_P	m	Remarks
1	0.70	0.70	Mixed Reclamated Soil											Miscellaneous reclaimed soil : Comprised of clay of various colors in which a large quantity of cobble stones to earth and chipped pieces of bricks and tiles are mixed. The upper part is concrete road surface of 28cm in thickness and slightly dense and wet.
2	1.60	0.90	Reclamated Soil				0.731	0.22	11.18	52.0	14.1	18.8	2	0.70
3	2.10	0 50	Clay				0.681	0.27	10.26	59.0	10 0	15.3	4	Reclaimed soil : Comprised of yellowish gray clay containing a small quantity of chipped pieces of bricks and cobble stones. Plastic and wet.
4	2 70	0 60	Loam										6	1.60
5	3.10	1.00	Light-loam										8	Clay : Yellowish brown, having stains of iron and manganese oxide compounds. Hard-plastic and wet.
10	3.90	0 80	Dense Boulder stone										10	2.10
20	4.80	0 90	Medium dense Boulder stone										12	Loam : Grayish yellow. Having stains of iron and manganese oxide compounds and calcium concretions. Plastic and wet.
11	5 50	0.70	Dense Boulder stone											2.70
30	7 60	2.10	Very dense Boulder stone										14	Light-loam : Grayish yellow. Having stains of iron and manganese oxide compounds and chipped pieces of mica. Slightly dense and wet.
21	8 30	0.70	Medium dense Boulder stone										16	3.10
12	9 80	1 50	Dense Boulder stone										18	Boulder stone
22	13.70	3.90	Medium dense Boulder stone										20	
31	16.50	2 80	Very dense Boulder stone										22	
23	17.30	0.80	Medium dense Boulder stone										24	
32	25.00	7.70	Very dense Boulder stone											25.00

Appendix C

VEHICLE OPERATING COST

Appendix C

VEHICLE OPERATING COST

Characteristics of Representative Vehicles

Table C-1 Abstract of Typical Vehicles

Vehicle Type	Bicycles	Motorcycle	Taxi		Private Car	Truck
Representative Vehicle	no brand	Wuyang	Xiali		Santana of Shangha	Changchun
Fuel	no	gasoline	gasoline	CNG	gasoline	gasoline/diesel oil
New Vehicle Price(RMB)						
(1)Market price	200	10,000	78,000	83,000	164,000	61,000
(2)Economic price	157	7,874	61,417	65,354	129,134	48,031
No. of tyres	2	2	4	4	4	6
Annual Travel Distance	5,700	10,700	121,400	121,400	26,900	29,000
Average Travel Speed (km/hour)	12	25	35	35	35	35
Necessary Driving Hours	475	428	3469	3469	769	829

Ordinary Bus			Mini bus	Double Decker, Articulated Bus
gasoline	CNG	diesel oil	gasoline	diesel-oil
135,000	150,000	135,000	70,000	230,000
106,299	118,110	106,299	55,118	181,102
4	4	4	4	6
69,400	69,400	69,400	69,400	69,400
25	25	25	25	25
2776	2776	2776	2776	2776

Note 1): Annual travel distances for bicycles, motorcycles, private cars and trucks
(formula) Daily average trips Average travel time Average travel speed×365 days
Note 2): CNG conversion cost for a taxi vehicle 5,000RMB
Note 3): Annual taxi travel distance 350km/day×365 days×0.95 （operation rate）
Note 4): Annual bus travel distance 200km/day×365days×0.95（operation rate）
Note 5): Socio-economic transfer costs such as Consumption Tax(10%) and VAT(17%) are deducted in economic vehicle price .
A similar method is applied in calculating other goods' economic prices

Table C-2 Compositions of Cars and Buses by Year

Year	Present Year 2000	Target Year 2010	Target Year 2010
Car	**taxi（37%）** gasoline taxi：90% CNG taxi：10% **private vehicle（47%）** gasoline only **truck（16%）** gasoline truck：50% diesel-oil truck：50%	**taxi（37%）** gasoline taxi：20% CNG taxi：80% **private vehicle（47%）** gasoline only **truck（16%）** gasoline truck：50% diesel-oil truck：50%	（same as left）
the average market prices	115,885 RMB per vehicle	117,180 RMB per vehicle	117,180 RMB per vehicle
the average economy prices	91,248 RMB per vehicle	92,268 RMB per vehicle	92,268 RMB per vehicle
Buses	**common bus（75%）** gasoline common bus：55% CNG common bus：32% diesel-oil common bus：13% **small-sized bus（11%）** chain·double-decker （14%）	**common bus（100%）** CNG common bus：80% diesel-oil common bus:20%	**common bus （100%）** CNGcommon bus:100%
the average market prices	144,750 RMB per vehicle	147,000 RMB per vehicle	150,000 RMB per vehicle
the average economy prices	113,976 RMB per vehicle	115,748 RMB per vehicle	118,110 RMB per vehicle

Note：Composition of cars and buses in 2000 are estimated based on :
-the year 2000 person trip survey results for cars, and
-the existing fleet for buses

Unit Prices of Vehicle Fuel

Table C-3 Vehicle Fuel Cost

Fuel Type	Market price	Economic price
gasoline	3.07RMB/liter	2.42RMB/liter
delsel-oil	3.67RMB/liter	2.89RMB/liter
CNG	1.7RMB/c.m.	1.3RMB/c.m.

Notes：The time of this investigation is November 2000。

Table C-4 Year 2000 Fuel Cost by Vehicle Type

Vehicle Share	Motor Cycle	Car	Bus
Gasoline	100	88	52
Diesel	0	8	24
CNG	0	4	24
Market price(RMB/liter)	3.07	3.07	2.95
Economic（RMB/liter)	2.42	2.42	2.31

Table C-5 Tear 2010 Fuel Cost by Vehicle Type

Vehicle Share	Motor Cycle	Car	Bus
Gasoline	100	62	0
Diesel	0	8	20
CNG	0	30	80
Market price(RMB/liter)	3.07	2.78	2.29
Economic（RMB/liter)	2.42	2.18	1.77

Table C-6 Year 2020 Fuel Cost of Vehicle Type

Vehicle Share	Motor Cycle	Car	Bus
Gasoline	100	62	0
Diesel	0	8	0
CNG	0	30	100
Market price(RMB/liter)	3.07	2.78	1.95
Economic（RMB/liter)	2.42	2.18	1.49

Note：The fuel consumption rate for CNG vehicles is compatible with that of diesel as follows:
CNG (km/c.m.)**:**diesel-oil (km/liter)= 1:0.87
(Source) Bus Operation Records In 1997 ,Osaka City,Japan

Consumption Rate and Cost of Fuel

Table C-7 Fuel Consumption Rates and Costs by Vehicle Type-Year 2000

	Travel Speed (Km/hr)	Motorcycle	Car	Bus
Fuel consumption Rate (liter per 1,000km)	5	78.6	212.6	672.7
	10	50.4	138.6	430.4
	20	34.4	100.2	311.2
	30	25.5	87.0	284.2
	40	23.1	80.2	264.5
	50	20.6	78.4	284.2
	60	23.7	81.0	326.1
	70	27.7	85.7	380.9
	80	31.8	92.7	438.1
	90	35.1	102.4	483.9
	100	38.8	113.1	534.5
	110		125.0	
	120		138.0	
Fuel Cost-Market Price (RMB per 1,000km)	5	241.3	653.4	1,981.2
	10	154.7	425.9	1,267.6
	20	105.5	307.9	916.5
	30	78.3	267.4	837.0
	40	70.9	246.5	779.0
	50	63.4	240.9	837.0
	60	72.8	248.9	960.4
	70	84.9	263.4	1,121.8
	80	97.6	284.9	1,290.3
	90	107.8	314.7	1,425.2
	100	119.0	347.6	1,574.2
	110		384.2	
	120		424.1	
Fuel Price-Economic Cost (RMB per 1,000km)	5	190.2	514.6	1,553.7
	10	122.0	335.5	994.1
	20	83.2	242.5	718.7
	30	61.7	210.6	656.4
	40	55.9	194.1	610.9
	50	49.9	189.8	656.4
	60	57.4	196.1	753.2
	70	66.9	207.4	879.7
	80	77.0	224.4	1,011.8
	90	84.9	247.8	1,117.6
	100	93.8	273.7	1,234.5
	110		302.6	
	120		334.0	

Table C-8 Consumption Rate and Cost of Fuel of Different Vehicles-at the Time of 2010

	Travel Speed (Km/hr)	Motorcycle	Car	Bus
Fuel consumption Rate	5	78.6	212.6	672.7
（liter per 1,000km）	10	50.4	138.6	430.4
	20	34.4	100.2	311.2
	30	25.5	87.0	284.2
	40	23.1	80.2	264.5
	50	20.6	78.4	284.2
	60	23.7	81.0	326.1
	70	27.7	85.7	380.9
	80	31.8	92.7	438.1
	90	35.1	102.4	483.9
	100	38.8	113.1	534.5
	110		125.0	
	120		138.0	
Fuel Cost-Market Price	5	241.3	591.5	1,543.2
（RMB per 1,000km）	10	154.7	385.6	987.3
	20	105.5	278.8	713.9
	30	78.3	242.0	652.0
	40	70.9	223.1	606.8
	50	63.4	218.1	652.0
	60	72.8	225.3	748.1
	70	84.9	238.4	873.8
	80	97.6	257.9	1,005.0
	90	107.8	284.9	1,110.1
	100	119.0	314.6	1,226.1
	110		347.8	
	120		383.9	
Fuel Price-Economic Cost	5	190.2	463.2	1,190.7
（RMB per 1,000km）	10	122.0	302.0	761.8
	20	83.2	218.3	550.8
	30	61.7	189.5	503.0
	40	55.9	174.7	468.2
	50	49.9	170.8	503.0
	60	57.4	176.5	577.2
	70	66.9	186.7	674.2
	80	77.0	202.0	775.4
	90	84.9	223.1	856.5
	100	93.8	246.4	946.1
	110		272.3	
	120		300.6	

Table C-9 Consumption Rate and Cost of Fuel of Different Vehicles-at the Time of 2020

	Travel Speed (Km/hr)	Motorcycle	Car	Bus
Fuel consumption Rate	5	78.6	212.6	672.7
（liter per 1,000km）	10	50.4	138.6	430.4
	20	34.4	100.2	311.2
	30	25.5	87.0	284.2
	40	23.1	80.2	264.5
	50	20.6	78.4	284.2
	60	23.7	81.0	326.1
	70	27.7	85.7	380.9
	80	31.8	92.7	438.1
	90	35.1	102.4	483.9
	100	38.8	113.1	534.5
	110		125.0	
	120		138.0	
Fuel Cost-Market Price	5	241.3	591.5	1,311.8
（RMB per 1,000km）	10	154.7	385.6	839.3
	20	105.5	278.8	606.8
	30	78.3	242.0	554.2
	40	70.9	223.1	515.8
	50	63.4	218.1	554.2
	60	72.8	225.3	635.9
	70	84.9	238.4	742.8
	80	97.6	257.9	854.3
	90	107.8	284.9	943.6
	100	119.0	314.6	1,042.3
	110		347.8	
	120		383.9	
Fuel Price-Economic Cost	5	190.2	463.2	1,002.3
（RMB per 1,000km）	10	122.0	302.0	641.3
	20	83.2	218.3	463.7
	30	61.7	189.5	423.5
	40	55.9	174.7	394.1
	50	49.9	170.8	423.5
	60	57.4	176.5	485.9
	70	66.9	186.7	567.5
	80	77.0	202.0	652.8
	90	84.9	223.1	721.0
	100	93.8	246.4	796.4
	110		272.3	
	120		300.6	

Engine Lubricant Oil

Table C-10 Lubricant Oil Consumption Rate and Costs by Vehicle Type

	Travel Speed (Km/hr)	Motorcycle	Car	Bus
consumption rate of lubrican	5	2.9	3.5	8.0
consumed by engine	10	2.8	2.2	5.1
（liter per 1,000km）	20	2.3	1.5	3.5
	30	1.9	1.3	2.9
	40	1.8	1.1	2.7
	50	1.4	1.1	2.6
	60	1.3	1.1	2.4
	70	1.2	1.1	2.1
	80	1.0	1.0	1.9
	90	0.9	0.9	1.7
	100	0.8	0.8	1.5
	110		0.7	
	120		0.7	
cost of lubricant oil consume	5	29.2	34.8	80.1
engine market prices	10	28.3	22.4	51.4
(RMB per kilometer)	20	23.1	15.4	35.3
	30	18.8	12.7	29.2
	40	17.6	11.3	26.8
	50	14.0	11.0	25.8
	60	12.8	10.9	23.6
	70	11.5	10.7	21.4
	80	10.3	10.0	18.7
	90	9.0	9.0	16.8
	100	7.8	8.1	15.1
	110		7.3	
	120		6.6	
cost of lubricant oil consume	5	23.0	27.4	63.0
engine economy prices	10	22.3	17.6	40.5
(RMB per kilometer)	20	18.2	12.1	27.8
	30	14.8	10.0	23.0
	40	13.8	8.9	21.1
	50	11.0	8.7	20.3
	60	10.0	8.6	18.6
	70	9.1	8.4	16.8
	80	8.1	7.9	14.7
	90	7.1	7.1	13.2
	100	6.1	6.4	11.9
	110		5.7	
	120		5.2	

Notes: market price of fuel of engine
economy price of fuel of engine
at the present time of 2000

Tyre

Table C-11 Tyre wear Rates and Costs by Vehicle Type

	Travel Speed (Km/hr)	Bicycle	Motorcycle	Car	Bus
No. of tyres per set		2	2	4	6
tyres (RMB per set)		50	350	1,660	4,410
tyres (RMB per set)		39	276	1,307	3,472
Average Tyre Life (km)		20,000	40,000	50,000	60,000
Average Tyre Wear Rate (% per 1000km)		5.0	2.5	2.0	1.7
Tyre Wear Indices	5	70	53	53	53
	10	78	56	56	56
	20	92	60	60	60
	30	107	67	67	67
	40	125	78	78	78
	50		92	92	92
	60		107	107	107
	70		125	125	125
	80		151	151	151
	90		180	180	180
	100		212	212	212
	110			247	
	120			285	
Tyre Cost-Market Price (RMB 1,000km)	5	1.8	4.6	17.6	39.0
	10	2.0	4.9	18.6	41.2
	20	2.3	5.3	19.9	44.1
	30	2.7	5.9	22.2	49.2
	40	3.1	6.8	25.9	57.3
	50		8.1	30.5	67.6
	60		9.4	35.5	78.6
	70		10.9	41.5	91.9
	80		13.2	50.1	111.0
	90		15.8	59.8	132.3
	100		18.6	70.4	155.8
	110			82.0	
	120			94.6	
Tyre Cost-Economic (RMB per 1,000km)	5	1.4	3.7	13.9	30.7
	10	1.5	3.9	14.6	32.4
	20	1.8	4.1	15.7	34.7
	30	2.1	4.6	17.5	38.8
	40	2.4	5.4	20.4	45.1
	50		6.3	24.0	53.2
	60		7.4	28.0	61.9
	70		8.6	32.7	72.3
	80		10.4	39.5	87.4
	90		12.4	47.1	104.2
	100		14.6	55.4	122.7
	110			64.6	
	120			74.5	

Note: Average tyre wear rate for bicycle is at 25 km/hr

Repair

Table C-12 Vehicle Repair Costs

	Travel Speed (Km/hr)	Bicycle	Motorcycle	Car	Bus
Market Price of vehicles (RMB)		200	10,000	115,885	144,750
Economic Price of vehicles(RMB)		157	7,874	91,248	113,976
market prices of tyre(RMB)		50	350	1,660	4,410
economy prices of tyre(RMB)		39	276	1,307	3,472
Vehicle Acquisition Cost except Tyre					
Market Price (RMB)		150	9,650	114,225	140,340
Economic Prices (RMB)		118	7,598	89,941	110,504
Repair Cost Rate to Vehicle Price expect Tyre		10	4	6	12
Annual Repair Cost					
Market Price (RMB)		15	386	6,854	16,841
Economic Prices(RMB)		12	304	5,396	13,260
travel distance of a year（km)		5,700	10,700	60,000	70,000
Average travel speed (km per hour)		12	25	35	25
Vehicle Repair Indices	5	130	144	141	142
(100 is set out at average travel speed)	10	90	135	133	131
	20	106	120	118	111
	30	123	85	105	89
	40	141	66	95	74
	50		52	94	72
	60		67	100	79
	70		88	108	88
	80		100	115	100
	90		112	122	112
	100		125	130	125
	110			139	
	120			148	
repairing cost -	5	3.4	51.9	161.1	342.2
market prices	10	2.4	48.7	151.9	315.4
(RMB per 1,000km)	20	2.8	43.3	134.8	267.3
	30	3.2	30.7	119.9	213.9
	40	3.7	23.8	108.5	179.1
	50		18.8	107.4	173.8
	60		24.2	114.2	189.8
	70		31.7	123.4	211.2
	80		36.1	131.4	240.6
	90		40.5	139.4	270.0
	100		45.1	148.5	300.7
	110			158.8	
	120			169.1	
repairing cost -	5	2.7	40.9	126.8	269.4
economy prices	10	1.9	38.3	119.6	248.4
(RMB per 1,000km)	20	2.2	34.1	106.1	210.5
	30	2.6	24.1	94.4	168.4
	40	2.9	18.7	85.4	141.0
	50		14.8	84.5	136.8
	60		19.0	89.9	149.4
	70		24.9	97.1	166.3
	80		28.4	103.4	189.4
	90		31.9	109.7	212.6
	100		35.5	116.9	236.8
	110			125.0	
	120			133.1	

Depreciation

Table C-13 Vehicle Depreciation Costs

	Bicycle	Motorcycle	Car	Bus
Vehicle Acquisition Cost except Tyre(RMB)				
Market price (RMB)	150	9,650	114,225	140,340
Economy price (RMB)	118	7,598	89,941	110,504
Service Life(years)	10	10	12	10
Residual Value Rate	10	10	10	4
travel distance of a year (km)	5,700	10,700	60,000	70,000
Average travel speed (km /hr)	12	25	35	25
Attributable shares of Depreciation Cost				
Distance related (%)	50	50	60	70
Time related (%)	50	50	40	30
depreciation cost				
market prices (RMB)	135	8,685	102,803	134,726
the part being attributed to travel distance	68	4,343	61,682	94,308
the part being attributed to travel time	68	4,343	41,121	40,418
economy prices (RMB)	106	6,838	80,947	106,084
the part being attributed to travel distance	53	3,419	48,568	74,259
the part being attributed to travel time	53	3,419	32,379	31,825

Table C-14 Vehicle Depreciation Costs subject to Travel Distance

	Travel Speed (Km/hr)	Bicycle	Motorcycle	Car	Bus
Speed-related Depreciation Indices	5	138	165	136	119
(supposing the average travel speed is 100)	10	104	132	130	114
	20	86	102	119	104
	30	101	99	108	96
	40	122	96	97	91
	50		93	85	91
	60		97	92	100
	70		103	102	105
	80		110	112	115
	90		119	121	127
	100		130	133	140
	110			145	
	120			160	
Depreciation Cost in Market Value	5	1.6	67.0	116.9	160.3
(RMB per 1,000km)	10	1.2	53.4	111.5	153.6
	20	1.0	41.3	101.7	140.1
	30	1.2	40.4	92.8	129.3
	40	1.4	39.0	83.1	122.6
	50		37.9	72.8	122.6
	60		39.5	78.8	134.7
	70		41.7	87.4	141.5
	80		44.6	95.9	154.9
	90		48.3	103.5	171.1
	100		52.8	113.9	188.6
	110			124.2	
	120			137.1	
Depreciation Cost in Economic Value	5	1.3	52.7	92.0	126.2
(RMB per 1,000km)	10	1.0	42.1	87.8	120.9
	20	0.8	32.5	80.1	110.3
	30	0.9	31.8	73.1	101.8
	40	1.1	30.7	65.4	96.5
	50		29.8	57.3	96.5
	60		31.1	62.1	106.1
	70		32.8	68.8	111.4
	80		35.1	75.6	122.0
	90		38.0	81.5	134.7
	100		41.5	89.7	148.5
	110			97.8	
	120			107.9	

Table C-15 Vehicle Depreciation Costs subject to Travel Time

	Bicycle	Motorcycle	Car	Bus
Market price				
per day (RMB)	0.018	1.190	9.388	11.073
per hour (RMB)	0.014	1.015	1.999	1.443
Economy price				
Daily cost (RMB)	0.015	0.937	7.392	8.719
Hourly cost (RMB)	0.011	0.799	1.574	1.137

Capital

Table C-16 Capital Opportunity Costs

	Bicycle	Motorcycle	Car	Bus
Vehicle Acquisition Cost except Tyre(RMB)				
Market prices (RMB)	150	9,650	114,225	140,340
Economic prices (RMB)	118	7,598	89,941	110,504
Service Life(years)	10	10	12	10
Residual Value Rate	10	10	10	4
Annual Travel Distance (km)	5,700	10,700	60,000	70,000
Average Travel Speed (km per hour)	12	25	35	25
Capital Recovery Factor(interest rate=10%	0.1627	0.1627	0.1468	0.1627
capital recovery cost				
Market prices (RMB per day)	0.03	1.92	22.99	25.64
Market prices (RMB per hour)	0.02	1.64	4.89	3.34
Economic prices (RMB per day)	0.02	1.51	18.10	20.19
Economic prices (RMB per hour)	0.01	1.29	3.85	2.63

Notes: Capital Recovery Factor=I/ {1.0-1.0(1.0+I)^N}

I=Future Interest Rate

N=the service life

Crew

Table C-17 Personnel Expenses

	Bicycle	Motorcycle	Car	Bus
Annual Crew Cost				
Market prices(RMB)	-	-	14,755	41,600
Economic price(RMB)	-	-	13,280	37,440
Annual Overhead Cost	-	-		
Market prices(RMB)	-	-	8,853	24,960
Economic price(RMB)	-	-	7,968	22,464
Daily Personnel Expenses	-	-		
Market prices(RMB)	-	-	64.68	182.36
Economic price(RMB)	-	-	58.21	164.12
Hourly Personnel Expenses	-	-		
Market prices(RMB)	-	-	13.77	23.77
Economic price(RMB)	-	-	12.39	21.39

Note): Personnel expenses are counted in the following cars:

-Taxi drivers: 1,000 RMB per monthly, 2 -shift in a day

-Truck drivers: 1,000 RMB per monthly, no shift

-Private car drivers: Taking account of rent-a-car and others,half of private car drivers is deemed in the pay of car owners:1,000 RMB monthly, no shift

Two drivers (1,000 RMB monthly, each)and two conductresses (600 RMB monthly,each) are assigned to one bus.

Other Fixed Cost

Table C-18 Other Fixed Costs

(RMB)

	Bicycle	Motorcycle	Car	Bus
Insurance cost	0	500	5,700	29,000
Taxi Business Quota	0	0	11,853	0
Other Charges				
Road Development Charge	0	180	4,739	27,720
Passenger / freight service charge	0	0	1,202	22,464
Transportation Management Charge	0	0	1,337	1,123
total of market prices				
cost of a year	0.0	680.0	24,831.4	80,370.2
cost per day	0.0	1.9	68.0	220.2
cost per hour	0.0	1.6	14.5	28.7
total of economy prices				
cost of a year	0.0	393.7	4,488.2	22,834.6
cost per day	0.0	1.1	12.3	62.6
cost per hour	0.0	0.9	2.6	8.2

Note 1): A taxi business quota is equivalent to 300,000 RMB which has 20 years' validity.It is assumed that all the expense is once borrowed at an interest rate of 10% and then the amount of principal and interest will be repaid during the valid period.

Note 2):Road development charges are calculated according to the regulated tariff by Sichuan Province in 1997 as fo

truck	170RMB/ton a month	Smal Passenger Vehiclel(Taxi)	410RMB per month for each one
car	210RMB/ton a month	motorcycle	15RMB per month for each one
Medium Passenger Vehicle(bus)	330RMB/ton a month	motor tricycle	17RMB per month for each one

Note 3): There are two ways to calculate passenger service charge,based on either by distance or at a fixed rate. The study has adopted the latter.(Base year:1995)

. Passenger×Distance Unit: 0.02RMB / km× No.of Passengers

..Fixed Unit : 65RMB/seat×month(for a vehicle with less than 20 seats)

52RMB / seat× month (for a vehicle with more than 21seats)

104RMB /seat a month (for a large passenger car using expressways)

.Truck for Logistics Business:0.02 RMB/km×ton

.Tuck for Non-logistics Business:25 RMB/ton×month

Note 5): Transportation management charges are collected based on either sales records or vehicle registation The study adopts the latter method.(Base year:1986)

Proportional charge:8‰ of sales amount

Fixed charge:

Truck	20RMB/ton a month	Passenger Vehicle(over 26 seats)	2.6RMB per seat a month
Middle to Luxury Private Car	40RMB/seat a month	Passenger Vehicle(16-25seats)	3.5RMB per seat a month
Passenger Vehicle with A/C	4.2RMB/ton a month	Passerger Vehicle (below 15 seats)	3.8RMB per seat a month

Note 6): Taxi business quota and other charges are regarded as socio-economic transfer costs,they are deducted in calculating economic costs.

Summary of Vehicle Operating Costs

Table C-19 VOC Subject to Travel Distance -Year 2000

(RMB per 1,000km)

	Travel Speed (Km/hr)	Bicycle	Motorcycle	Car	Bus
market prices	5	6.8	394.0	983.7	2,602.8
	10	5.5	290.1	730.4	1,829.2
	20	6.1	218.4	579.8	1,403.4
	30	7.1	174.0	515.1	1,258.7
	40	8.3	158.1	475.3	1,164.8
	50		142.1	462.7	1,226.8
	60		158.5	488.4	1,387.2
	70		180.7	526.3	1,587.7
	80		201.8	572.3	1,815.5
	90		221.2	626.3	2,015.4
	100		243.1	688.5	2,234.5
	110			756.4	
	120			831.4	
economic prices	5	5.3	310.4	774.7	2,043.0
	10	4.3	228.5	575.2	1,436.2
	20	4.8	172.1	456.6	1,102.1
	30	5.6	137.1	405.6	988.4
	40	6.5	124.6	374.3	914.7
	50		111.9	364.3	963.3
	60		124.9	384.6	1,089.2
	70		142.4	414.5	1,246.6
	80		159.0	450.7	1,425.4
	90		174.3	493.2	1,582.3
	100		191.6	542.2	1,754.4
	110			595.7	
	120			654.8	

Table C-20 Costs Being Attributed to Travel Distance- at the Time of 2010

(RMB per 1,000km)

	Travel Speed (Km/hr)	Bicycle	Motorcycle	Car	Bus
market prices	5	6.8	394.0	921.8	2,164.7
	10	5.5	290.1	690.0	1,548.9
	20	6.1	218.4	550.6	1,200.7
	30	7.1	174.0	489.7	1,073.6
	40	8.3	158.1	451.9	992.6
	50		142.1	439.8	1,041.7
	60		158.5	464.8	1,174.8
	70		180.7	501.4	1,339.7
	80		201.8	545.3	1,530.2
	90		221.2	596.5	1,700.3
	100		243.1	655.6	1,886.4
	110			720.0	
	120			791.3	
economic prices	5	5.3	310.4	723.3	1,680.0
	10	4.3	228.5	541.7	1,204.0
	20	4.8	172.1	432.3	934.1
	30	5.6	137.1	384.6	835.0
	40	6.5	124.6	354.9	772.0
	50		111.9	345.4	809.9
	60		124.9	365.0	913.2
	70		142.4	393.7	1,041.0
	80		159.0	428.3	1,189.0
	90		174.3	468.5	1,321.2
	100		191.6	514.8	1,465.9
	110			565.5	
	120			621.4	

Table C-21 Costs Being Attributed to Travel Distance- at the Time of 2020

(RMB per 1,000km)

	Travel Speed (Km/hr)	Bicycle	Motorcycle	Car	Bus
market prices	5	6.8	394.0	921.8	1,933.3
	10	5.5	290.1	690.0	1,400.9
	20	6.1	218.4	550.6	1,093.7
	30	7.1	174.0	489.7	975.8
	40	8.3	158.1	451.9	901.6
	50		142.1	439.8	944.0
	60		158.5	464.8	1,062.7
	70		180.7	501.4	1,208.7
	80		201.8	545.3	1,379.5
	90		221.2	596.5	1,533.8
	100		243.1	655.6	1,702.5
	110			720.0	
	120			791.3	
economic prices	5	5.3	310.4	723.3	1,491.7
	10	4.3	228.5	541.7	1,083.5
	20	4.8	172.1	432.3	847.0
	30	5.6	137.1	384.6	755.4
	40	6.5	124.6	354.9	697.9
	50		111.9	345.4	730.4
	60		124.9	365.0	821.9
	70		142.4	393.7	934.4
	80		159.0	428.3	1,066.3
	90		174.3	468.5	1,185.7
	100		191.6	514.8	1,316.3
	110			565.5	
	120			621.4	

Table C-22 VOC subject to Travel Time

(RMB per hour)

	Bicycle	Motorcycle	Car	Bus
market prices				
depreciation cost of bodies	0.01	1.01	2.00	1.44
capital revery cost	0.02	1.64	4.89	3.34
personnel expenses	0.00	0.00	13.77	23.77
other fixed costs	0.00	1.59	14.48	28.68
total	0.03	4.24	35.15	57.24
economic prices				
depreciation cost of bodies	0.01	0.80	1.57	1.14
capital revery cost	0.01	1.29	3.85	2.63
personnel expenses	0.00	0.00	12.39	21.39
other fixed costs	0.00	0.92	2.62	8.16
total	0.03	3.01	20.44	33.32

Appendix D

PROFILES OF MAJOR PROPOSED PROJECTS

Appendix D

PROFILES OF MAJOR PROPOSED PROJECTS

1. East-West Primary Busway Project
(Shudu Road, L=9.0km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	18	50	900	50/m^2
2.Removal of existing outer median	W=2.0m, planting trees	km	18	30	540	30/m
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cm	km	18	100	1,800	50/m^2
4.Narrowing of existing sidewalk		km	0	100	0	50/m^2
5.Pavement of bicycle lane		km	0	150	0	150/m^2
6.Overlay of existing carriageway	T=5cm	km	0	100	0	100/m^2
7.Pavement of bus lane	pavement, road base W=3.5m	km	18	525	9,450	150/m^2
8.Surface treatment of bus lane	surface, H=5cm, W=3.5m	km	18	175	3,150	50/m^2
9.Construction of outer median	concrete	km	18	50	900	50/m
10.Bus stop	roof, chairs, timetable	site	36	40	1,440	
11.Bus bay installation	W=3.0m, T=20cm	site	0	80	0	
12.Signal installation	bus priority signal	site	6	200	1,200	
13.Improvement of at-grade intersection	channelization, signal	site	6	200	1,200	
14.Improvement of grade-separated intersection	bicycle road	site	2	21,528	43,056	
15.Bus terminal		site	0	42,347	0	
16.Improveemnt of living space		site	1	500	500	
17.Improvement of pedestrian bridge		site	4	1,000	4,000	
18.Bus transfer facility		site	2	663	1,326	
19.Subtotal (A)					69,462	
20.Road-related facility	drainage, piping and planting trees	set	1		6,946	（A）*10%
21.Traffic-related facility	traffic sign, marking	set	1		6,946	（A）*10%
22.Subtotal (B)					13,892	
23.Construction cost total (C)					83,354	（A）+ (B)
24.Construction cost per km			9		9,262	
25.Land acquisition cost		set	0	1	0	
26. Compensation for house displacement			0		0	
27.Subtotal (D)					83,354	
28.Technical survey cost		set	1		8,335	（C）*10%
29.Contingency		set	1		12,503	（D）*15%
30.Project administration cost		set	1		8,335	（D）*10%
31.Indirect cost total (E)					29,174	
32.Project cost					112,528	
33.Length of road section		km	9			
34. Project cost per km		km	1		12,503	

2. North-South Primary Busway Project
(Renmin Bei-Lu and Renmin Zhong-Lu, L=4.0km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	10	50	500	50/m^2
2.Removal of existing outer median	W=2.0m, planting trees	km	10	30	300	30/m
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cm	km	10	100	1,000	50/m^2
4.Narrowing of existing sidewalk		km	0	100	0	50/m^2
5.Pavement of bicycle lane		km	0	150	0	150/m^2
6.Overlay of existing carriageway	T=5cm	km	0	100	0	100/m^2
7.Pavement of bus lane	pavement, road base W=3.5m	km	8	525	4,200	150/m^2
8.Surface treatment of bus lane	surface, H=5cm, W=3.5m	km	8	175	1,400	50/m^2
9.Construction of outer median	concrete	km	10	50	500	50/m
10.Bus stop	roof, chairs, timetable	site	20	40	800	
11.Bus bay installation	W=3.0m, T=20cm	site	0	80	0	
12.Signal installation	bus priority signal	site	10	200	2,000	
13.Improvement of at-grade intersection	channelization, signal	site	10	200	2,000	
14.Improvement of grade-separated intersection	bicycle road	site	2	21,528	43,056	
15.Bus terminal		site	0	42,347	0	
16.Improveemnt of living space		site	1	500	500	
17.Improvement of pedestrian bridge		site	0	1,000	0	
18.Bus transfer facility		site	1	663	663	
19.Subtotal (A)					56,919	
20.Road-related facility	drainage, piping and planting trees	set	1		5,692	（A）*10%
21.Traffic-related facility	traffic sign, marking	set	1		5,692	（A）*10%
22.Subtotal (B)					11,384	
23.Construction cost total (C)					68,303	（A）＋（B）
24.Construction cost per km			8		8,538	
25.Land acquisition cost		set	0	1	0	
26. Compensation for house displacement			0		0	
27.Subtotal (D)					68,303	
28.Technical survey cost		set	1		6,830	（C）*10%
29.Contingency		set	1		10,245	（D）*15%
30.Project administration cost		set	1		6,830	（D）*10%
31.Indirect cost total (E)					23,906	
32.Project cost					92,209	
33.Length of road section		km	8			
34. Project cost per km		km	1		11,526	

3. The 1st Ring Road Primary Busway Project
(L=19.0km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	38	50	1,900	50/m^2
2.Removal of existing outer median	W=2.0m, planting trees	km	38	30	1,140	30/m
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cı	km	38	100	3,800	50/m^2
4.Narrowing of existing sidewalk		km	0	100	0	50/m^2
5.Pavement of bicycle lane		km	0	150	0	150/m^2
6.Overlay of existing carriageway	T=5cm	km	0	100	0	100/m^2
7.Pavement of bus lane	pavement, road base W=3.5m	km	38	525	19,950	150/m^2
8.Surface treatment of bus lane	surface, H=5cm, W=3.5m	km	38	175	6,650	50/m^2
9.Construction of outer median	concrete	km	38	50	1,900	50/m
10.Bus stop	roof, chairs, timetable	site	76	40	3,040	
11.Bus bay installation	W=3.0m, T=20cm	site	0	80	0	
12.Signal installation	bus priority signal	site	19	200	3,800	
13.Improvement of at-grade intersection	channelization, signal	site	19	200	3,800	
14.Improvement of grade-separated intersection	bicycle road	site	6	21,528	129,168	
15.Bus terminal		site	0	42,347	0	
16.Improveemnt of living space		site	1	500	500	
17.Improvement of pedestrian bridge		site	1	1,000	1,000	
18.Bus transfer facility		site	2	663	1,326	
19.Subtotal (A)					177,974	
20.Road-related facility	drainage, piping and planting trees	set	1		17,797	（A）*10%
21.Traffic-related facility	traffic sign, marking	set	1		17,797	（A）*10%
22.Subtotal (B)					35,595	
23.Construction cost total (C)					213,569	（A）＋（B）
24.Construction cost per km			19		11,240	
25.Land acquisition cost		set	0	1	0	
26. Compensation for house displacement			0		0	
27.Subtotal (D)					213,569	
28.Technical survey cost		set	1		21,357	（C）*10%
29.Contingency		set	1		32,035	（D）*15%
30.Project administration cost		set	1		21,357	（D）*10%
31.Indirect cost total (E)					74,749	
32.Project cost					288,318	
33.Length of road section		km	19			
34. Project cost per km		km	1		15,175	

4. The 2nd Ring Road Primary Busway Project
(L=27.0 km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	54	50	2,700	50/m^2
2.Removal of existing outer median	W=2.0m, planting trees	km	54	30	1,620	30/m
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cm	km	54	100	5,400	50/m^2
4.Narrowing of existing sidewalk		km	0	100	0	50/m^2
5.Pavement of bicycle lane		km	0	150	0	150/m^2
6.Overlay of existing carriageway	T=5cm	km	0	100	0	100/m^2
7.Pavement of bus lane	pavement, road base W=3.5m	km	54	525	28,350	150/m^2
8.Surface treatment of bus lane	surface, H=5cm, W=3.5m	km	54	175	9,450	50/m^2
9.Construction of outer median	concrete	km	54	50	2,700	50/m
10.Bus stop	roof, chairs, timetable	site	108	40	4,320	
11.Bus bay installation	W=3.0m, T=20cm	site	0	80	0	
12.Signal installation	bus priority signal	site	19	200	3,800	
13.Improvement of at-grade intersection	channelization, signal	site	19	200	3,800	
14.Improvement of grade-separated intersection	bicycle road	site	0	21,528	0	
15.Bus terminal		site	0	42,347	0	
16.Improveemnt of living space		site	1	500	500	
17.Improvement of pedestrian bridge		site	0	1,000	0	
18.Bus transfer facility		site	4	663	2,652	
19.Subtotal (A)					65,292	
20.Road-related facility	drainage, piping and planting trees	set	1		6,529	(A)*10%
21.Traffic-related facility	traffic sign, marking	set	1		6,529	(A)*10%
22.Subtotal (B)					13,058	
23.Construction cost total (C)					78,350	(A)+(B)
24.Construction cost per km			27		2,902	
25.Land acquisition cost		set	0	1	0	
26. Compensation for house displacement			0		0	
27.Subtotal (D)					78,350	
28.Technical survey cost		set	1		7,835	(C)*10%
29.Contingency		set	1		11,753	(D)*15%
30.Project administration cost		set	1		7,835	(D)*10%
31.Indirect cost total (E)					27,423	
32.Project cost					105,773	
33.Length of road section		km	27			
34. Project cost per km		km	1		3,918	

5. Xinnan Lu-Hongxing Lu Bus Priority Lane Project
(L=8.0 km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	0	200	0	
2.Removal of existing outer median	W=2.0m, planting trees	km	0	100	0	
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cm	km	0	100	0	
4.Removal of existing sidewalk	W=4.0m*2	km	16	200	3,200	50/m^2
5.Overlay of existing carriageway	W=3.0m, T=5.0cm	km	8	600	4,800	100/m^2
6.Pavement of bicycle lane	W=4.0m, T=20cm	km	16	600	9,600	150/m^2
7.Pavement of bus lane	W=3.5m, T=10cm	km	16	525	8,400	150/m^2
8.Construction of outer median	concrete W=1.5m	km	16	200	3,200	200/m
9.Construction of sidewalkl	W=4.0m	km	16	200	3,200	50/m^2
10.Bus stop	roof, chair, timetable	site	108	40	4,320	
11.Bus bay installation	W=3.0m, T=20cm	site	108	80	8,640	200/m^2
12.Signal installation	bus priority signal	site	10	200	2,000	
13.Improvement of at-grade intersection	channelization, signal	site	10	200	2,000	
14.Improvement of grade-separated intersection	bicycle road	site	0	21,528	0	
15.Bus terminal		site	0	42,347	0	
16.Improveemnt of living space		site	1	500	500	
17.Bus transfer facility		site	2	663	1,326	
18.Subtotal (A)					51,186	
19.Road-related facility	drainage, piping and planting trees	set	1		5,119	（A）*10%
201.Traffic-related facility	traffic sign, marking	set	1		5,119	（A）*10%
21.Subtotal (B)					10,237	
22.Construction cost total (C)					61,423	（A）＋（B）
23.Construction cost per km			8		7,678	
24.Land acquisition cost		set	0	1	0	
25. Compensation for house displacement		set	250	50	12,500	
26.Subtotal (D)					73,923	
27.Technical survey cost		set	1		7,392	（C）*10%
289.Contingency		set	1		11,089	（D）*15%
29.Project administration cost		set	1		7,392	（D）*10%
30.Indirect cost total (E)					25,873	
31.Project cost					99,796	（D）+（E）
32.Length of road section		km	8			
33. Project cost per km		km	1		12,475	

6. Wuhouci Lu-Deizhan Lu Bus Priority Lane Project
(L=8.0 km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	0	200	0	
2.Removal of existing outer median	W=2.0m, planting trees	km	0	100	0	
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10c	km	0	100	0	
4.Removal of existing sidewalk		km	0	100	0	
5.Overlay of existing carriageway	W=3.0m, T=5.0cm	km	8	600	4,800	
6.Pavement of bicycle lane	W=4.0m	km	4.8	600	2,880	
7.Pavement of bus lane	surface W=3.5m, T=10cm	km	16	525	8,400	
8.Construction of outer median	concrete	km	4.8	200	960	
9.Bus stop	roof, chair, timetable	site	32	40	1,280	
10.Bus bay installation	W=3.0m, T=20cm	site	32	80	2,560	
11.Signal installation	bus priority signal	site	9	200	1,800	
12.Improvement of at-grade intersection	channelization, signal	site	9	200	1,800	
13.Improvement of grade-separated intersection	bicycle road	site	0	21,528	0	
14.Bus terminal		site	0	42,347	0	
15.Improveemnt of living space		site	1	500	500	
16.Bus transfer facility		site	2	663	1,326	
17.Subtotal (A)					26,306	
18.Road-related facility	drainage, piping and planting trees	set	1		2,631	（A）*10%
19.Traffic-related facility	traffic sign, marking	set	1		2,631	（A）*10%
20.Subtotal (B)					5,261	
21.Construction cost total (C)					31,567	（A）＋（B）
22.Construction cost per km			8		3,946	
23.Land acquisition cost		set	0	1	0	
24. Compensation for house displacement		household	0		0	
25.Subtotal (D)					31,567	
26.Technical survey cost		set	1		3,157	（C）*10%
27.Contingency		set	1		4,735	（D）*15%
28.Project administration cost		set	1		3,157	（D）*10%
29.Indirect cost total (E)					11,049	
30.Project cost					42,616	
31.Length of road section		km	8			
32.Project cost per km		km	1		5,327	

7. Shuanglin Lu-Shawan Lu Bus Priority Lane Project
(L=8.0 km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	0	200	0	
2.Removal of existing outer median	W=2.0m, planting trees	km	0	100	0	
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cm	km	0	100	0	
4.Widening of carriageway	W=4.5cm	km	2.1	1,350	2,835	
5.Overlay of existing carriageway	W=3.0m, T=5.0cm	km	5.9	600	3,540	
6.Pavement of bicycle lane	W=4.0m	km	2.1	600	1,260	
7.Pavement of bus lane	surface W=3.5m, T=10cm	km	16	525	8,400	
8.Construction of outer median	concrete	km	4.2	200	840	
9.Bus stop	roof, chair, timetable	site	32	40	1,280	
10.Bus bay installation	W=3.0m, T=20cm	site	32	80	2,560	
11.Signal installation	bus priority signal	site	10	200	2,000	
12.Improvement of at-grade intersection	channelization, signal	site	10	200	2,000	
13.Improvement of grade-separated intersection	bicycle road	site	0	21,528	0	
14.Bus terminal		site	0	42,347	0	
15.Improveemnt of living space		site	1	500	500	
16.Bus transfer facility		site	2	663	1,326	
17.Subtotal (A)					26,541	
18.Road-related facility	drainage, piping and planting trees	set	1		2,654	(A)*10%
19.Traffic-related facility	traffic sign, marking	set	1		2,654	(A)*10%
20.Subtotal (B)					5,308	
21.Construction cost total (C)					31,849	(A)+(B)
22.Construction cost per km			8		3,981	
23.Land acquisition cost		set	0	1	0	
24. Compensation for house displacement		household	50	70	3,500	
25.Subtotal (D)					31,849	
26.Technical survey cost		set	1		3,185	(C)*10%
27.Contingency		set	1		4,777	(D)*15%
28.Project administration cost		set	1		3,185	(D)*10%
29.Indirect cost total (E)					11,147	
30.Project cost					42,996	
31.Length of road section		km	8			
32.Project cost per km		km	1		5,375	

8. North Traffic Corridor Bus Priority Lane Project
(Jiefang Lu、L=4.0km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	0	200	0	
2.Removal of existing outer median	W=2.0m, planting trees	km	0	100	0	
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cm	km	0	100	0	
4.Removal of existing sidewalk		km	0	100	0	
5.Overlay of existing carriageway	W=3.0m, T=5.0cm	km	8	700	5,600	
6.Pavement of bicycle lane	W=4.0m	km	0	600	0	
7.Pavement of bus lane	surface W=3.5m, T=10cm	km	8	525	4,200	
8.Construction of outer median	concrete	km	0	200	0	
9.Bus stop	roof, chair, timetable	site	16	40	640	
10.Bus bay installation	W=3.0m, T=20cm	site	16	80	1,280	
11.Signal installation	bus priority signal	site	6	200	1,200	
12.Improvement of at-grade intersection	channelization, signal	site	6	200	1,200	
13.Improvement of grade-separated intersection	bicycle road	site	0	21,528	0	
14.Bus terminal		site	0	42,347	0	
15.Improveemnt of living space		site	1	500	500	
16.Bus transfer facility		site	1	663	663	
17.Subtotal (A)					15,283	
18.Road-related facility	drainage, piping and planting trees	set	1		1,528	(A)*10%
19.Traffic-related facility	traffic sign, marking	set	1		1,528	(A)*10%
20.Subtotal (B)					3,057	
21.Construction cost total (C)					18,340	(A)+(B)
22.Construction cost per km			4		4,585	
23.Land acquisition cost		set	0	1	0	
24. Compensation for house displacement		househol	0		0	
25.Subtotal (D)					18,340	
26.Technical survey cost		set	1		1,834	(C)*10%
27.Contingency		set	1		2,751	(D)*15%
28.Project administration cost		set	1		1,834	(D)*10%
29.Indirect cost total (E)					6,419	
30.Project cost					24,759	
31.Length of road section		km	4			
32.Project cost per km		km	1		6,190	

9. North-West Traffic Corridor Bus Priority Lane Project
(Cadianzi Lu, L=4.0 km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	0	200	0	
2.Removal of existing outer median	W=2.0m, planting trees	km	0	100	0	
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cr	km	0	100	0	
4.Removal of existing sidewalk		km	0	100	0	
5.Overlay of existing carriageway	W=3.0m, T=5.0cm	km	8	600	4,800	
6.Pavement of bicycle lane	W=4.0m	km	0	600	0	
7.Pavement of bus lane	surface W=3.5m, T=10cm	km	8	525	4,200	
8.Construction of outer median	concrete	km	0	200	0	
9.Bus stop	roof, chair, timetable	site	16	40	640	
10.Bus bay installation	W=3.0m, T=20cm	site	16	80	1,280	
11.Signal installation	bus priority signal	site	5	200	1,000	
12.Improvement of at-grade intersection	channelization, signal	site	5	200	1,000	
13.Improvement of grade-separated intersection	bicycle road	site	0	21,528	0	
14.Bus terminal		site	0	42,347	0	
15.Improveemnt of living space		site	1	500	500	
16.Bus transfer facility		site	1	663	663	
17.Subtotal (A)					14,083	
18.Road-related facility	drainage, piping and planting trees	set	1		1,408	(A)*10%
19.Traffic-related facility	traffic sign, marking	set	1		1,408	(A)*10%
20.Subtotal (B)					2,817	
21.Construction cost total (C)					16,900	(A)+(B)
22.Construction cost per km			4		4,225	
23.Land acquisition cost		set	0	1	0	
24. Compensation for house displacement		household	0		0	
25.Subtotal (D)					16,900	
26.Technical survey cost		set	1		1,690	(C)*10%
27.Contingency		set	1		2,535	(D)*15%
28.Project administration cost		set	1		1,690	(D)*10%
29.Indirect cost total (E)					5,915	
30.Project cost					22,815	
31.Length of road section		km	4			
32.Project cost per km		km	1		5,704	

10. South-West Traffic Corridor Bus Priority Lane Project
(Caojin Lu, L=4.0 km)
(Ximianqiao Jie, L=4.0 km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	0	200	0	
2.Removal of existing outer median	W=2.0m, planting trees	km	0	100	0	
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cm	km	0	100	0	
4.Removal of existing sidewalk		km	0	100	0	
5.Overlay of existing carriageway	W=3.0m, T=5.0cm	km	8	600	4,800	
6.Pavement of bicycle lane	W=4.0m	km	0	600	0	
7.Pavement of bus lane	surface W=3.5m, T=10cm	km	16	525	8,400	
8.Construction of outer median	concrete	km	0	200	0	
9.Bus stop	roof, chair, timetable	site	32	40	1,280	
10.Bus bay installation	W=3.0m, T=20cm	site	32	80	2,560	
11.Signal installation	bus priority signal	site	4	200	800	
12.Improvement of at-grade intersection	channelization, signal	site	4	200	800	
13.Improvement of grade-separated intersection	bicycle road	site	0	21,528	0	
14.Bus terminal		site	0	42,347	0	
15.Improveemnt of living space		site	1	500	500	
16.Bus transfer facility		site	2	663	1,326	
17.Subtotal (A)					20,466	
18.Road-related facility	drainage, piping and planting trees	set	1		2,047	(A)*10%
19.Traffic-related facility	traffic sign, marking	set	1		2,047	(A)*10%
20.Subtotal (B)					4,093	
21.Construction cost total (C)					24,559	(A)+(B)
22.Construction cost per km			8		3,070	
23.Land acquisition cost		set	0	1	0	
24. Compensation for house displacement		household	0		0	
25.Subtotal (D)					24,559	
26.Technical survey cost		set	1		2,456	(C)*10%
27.Contingency		set	1		3,684	(D)*15%
28.Project administration cost		set	1		2,456	(D)*10%
29.Indirect cost total (E)					8,596	
30.Project cost					33,155	
31.Length of road section		km	8			
32.Project cost per km		km	1		4,144	

11. East Traffic Corridor Bus Priority Lane Project
(Dongda Jie, L=4.0 km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Removal of existing carriageway pavement	W=1.0m, surface	km	0	200	0	
2.Removal of existing outer median	W=2.0m, planting trees	km	0	100	0	
3.Removal of existing bicycle lane pavement	surface H=5cm, road base H=10cı	km	0	100	0	
4.Removal of existing sidewalk		km	0	100	0	
5.Overlay of existing carriageway	W=3.0m, T=5.0cm	km	4	600	2,400	
6.Pavement of bicycle lane	W=4.0m	km	0	600	0	
7.Pavement of bus lane	surface W=3.5m, T=10cm	km	8	525	4,200	
8.Construction of outer median	concrete	km	0	200	0	
9.Bus stop	roof, chair, timetable	site	16	40	640	
10.Bus bay installation	W=3.0m, T=20cm	site	16	80	1,280	
11.Signal installation	bus priority signal	site	4	200	800	
12.Improvement of at-grade intersection	channelization, signal	site	4	200	800	
13.Improvement of grade-separated intersection	bicycle road	site	0	21,528	0	
14.Bus terminal		site	0	42,347	0	
15.Improveemnt of living space		site	1	500	500	
16.Bus transfer facility		site	2	663	1,326	
17.Subtotal (A)					11,946	
18.Road-related facility	drainage, piping and planting trees	set	1		1,195	（A）*10%
19.Traffic-related facility	traffic sign, marking	set	1		1,195	（A）*10%
20.Subtotal (B)					2,389	
21.Construction cost total (C)					14,335	（A）＋（B）
22.Construction cost per km			8		1,792	
23.Land acquisition cost		set	0	1	0	
24. Compensation for house displacement		household	0		0	
25.Subtotal (D)					14,335	
26.Technical survey cost		set	1		1,434	（C）*10%
27.Contingency		set	1		2,150	（D）*15%
28.Project administration cost		set	1		1,434	（D）*10%
29.Indirect cost total (E)					5,017	
30.Project cost					19,353	
31.Length of road section		km	8			
32.Project cost per km		km	1		2,419	

12. Inter-city Bus Terminal Project
(7 sites)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1. Land preparation	uprooting, land preparation	Ha	5	20	100	
2. Disposal of soil waste	L=10km	M3	15,000	0.01	150	
3. Filling	transport,fixing	M3	15,000	0.01	150	
4. Pavenment	bus bay	M2	3,000	0.2	600	20 buses
	platform	M2	3,000	0.2	600	20 buses
	vehicle parking	M2	1,500	0.2	300	50 buses
	bus parking	M2	1,500	0.2	300	30 buses
	bus night parking	M2	2,500	0.2	500	50 buses
	bicycle parking	M2	10,000	0.05	500	200 buses
	road, W=20m	M2	10,000	0.3	3,000	500m
	other space	M2	5,000	0.15	750	
5. Building	office building	M2	3,000	2	4,500	30*50*2
	shop	M2	1,200	1	1,440	20*20*3
	communications facility	M2	2,000	1	2,000	20*100
	bus maintenance facility	M2	1,500	0.5	750	30*50
	lodging facility	M2	5,000	2	10,000	（50＋50）*50人
6. Greenery		M2	10,000	0.05	500	
7. Subtotal (A)					26,140	
8. Relevant facility	electricy, water, etc.				2,614	(A)*10%
9. Guide sign					2,614	(A)*10%
10. Subtotal (B)					5,228	
11. (A) + (B)					31,368	
12. Technical survey cost	design and supervision				3,137	(A+B)*10%
13. Contingency					4,705	(A+B)*15%
14. Project administration cost	for management				3,137	(A+B)*10%
15. Subtotal (C)					10,979	
16. Project cost per site		site	1		42,347	
17. Total project cost for seven sites		site	7	42,347	296,429	

13. Bus Transfer Facility Project
(construction at 10 sites)

(RMB 000 at 2000 prices)

Project	Description	Unit	Number	Price	Amount	Application
1. Pedestrian bridge	L=80m, W=3.0m	M2	80	4	320	
2. Sidewalk improvement	W=3.0m, L=100	M2	300	0.1	30	
3. Improvement of facility		site	4	40	160	
4. Direct construction cost subtotal (A)					510	
5. Indirect construction cost					153	(A)*30%
6. Total construction cost (B)					663	
7. Technical survey cost					66	(B)*10%
8. Contingency					99	(B)*15%
9. Project administration cost					66	(B)*10%
10. Subtotal					231	
11. Project cost per site		site	1		894	
12. Total project cost		site	10	894	8,940	

14. Bus Stop Project
(construction at 230 sites)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1. Removal of existing bus stop		set	1	5	5	
2. Bus bay pavement	W=3.0m	set	1	80	80	
3.Construction bus stop	roof, chair	set	1	30	30	
4. Other facility		set	1	5	5	
5. Direct construction cost (A)					120	
6. Indirect construction cost (B)					12	(A)*10%
7. Total construction cost (C)					132	
8. Technical survey cost					7	(C) *5%
9. Contingency					13	(C) *10%
10. Project administration cost					7	(C) *5%
11. Subtotal (D)					27	
12. Project cost per site			1		159	
134. Total project cost			230	159	36,570	

15. Intersection Improvement Project
(10 sites)

(RMB 000 at 2000 prices)

Project	Description	Unit	Number	Price	Amount	Application
1. Removal of existing pavement		m2	9,600	0.5	4,800	
2. Bridge (1)	L=80m, W=20m	m2	1,600	4	6,400	
3. Bridge (2)	L=40m, W=20m	m2	800	4	3,200	
4. Retaining wall	L=640m, H=2m	m	640	1	640	
5. Traffic signal	all directions	site	1	20	20	
6. Pavement		m2	9,600	0.3	2,880	
7. Subtotal (A)					17,940	
8. Road-related facility	draining facility				1,794	(A)*10%
9.Traffic-related facility	electric+B14s				1,794	(A)*10%
10. Construction cost (B)					21,528	
11. Technical survey cost					1,076	(B)*5%
12. Contingency					2,153	(B)*10%
13. Project administration cost					2,153	(B)*10%
14. Subtotal (C)					5,382	
15. Project cost per site		site			26,910	
16. Total project cost		site	10		269,100	

16. Bicycle Lane Project
(L=80.0 km)

(RMB 000 at 2000 prices)

Work Item	Description	Unit	Quantity	Unit Cost	Total	Remarks
1.Overlay of existing road	W=6m, T=3cm	km	80	60	4,800	
2.Guide sign		km	80	5	400	
3. Relevant facility		km	80	10	800	
4. Nan river bridge	L=50m, W=10m	m2	500	5	2,500	
5. Fu river bridge	L=55m, W=10m	m2	550	5	2,750	
6. Direct cosntruction cost (A)					11,250	
7. Indirect construction cost (B)					1,125	(A)*10%
8. Total construction cost (C)					12,375	(A)+(B)
9. Technical survey cost					619	(C)*5%
10. Contingency					1,238	(C)*10%
11. Project administration cost					1,238	(C)*10%
12. Subtotal (D)					3,094	
13. Total project cost					15,469	
14. Project cost per km		km	80		193	

Appendix E

OD MATRIX BY PURPOSE

Appendix E

OD Matrix by Purpose

1. Medium Zone OD Matrix by Purpose (Work)

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13
1	12,427	5,901	2,456	3,184	8,520	3,632	3,573	3,315	3,060	2,729	2,915	4,334	1,488
2	5,138	9,613	1,265	2,006	2,297	3,869	3,204	2,353	2,157	1,488	1,770	1,162	2,066
3	1,380	2,787	7,309	1,118	369	736	333	1,312	1,741	1,194	773	747	624
4	3,962	4,031	1,561	12,356	6,654	3,215	1,870	3,676	2,700	2,669	4,866	3,114	2,404
5	4,747	3,283	834	2,380	30,898	4,474	957	4,102	1,055	952	5,275	3,372	2,351
6	3,620	6,110	1,216	2,112	4,590	42,516	4,999	2,808	2,031	747	2,249	12,090	17,564
7	2,577	3,906	749	1,952	3,118	2,848	10,056	2,628	1,303	654	987	1,504	6,213
8	4,647	9,889	2,401	1,639	5,836	3,226	4,956	30,981	5,391	865	1,658	1,646	3,942
9	2,639	7,236	2,554	1,861	1,645	747	3,324	8,246	14,664	1,281	2,555	311	1,182
10	1,880	682	1,015	1,514	1,091	1,287	973	943	1,612	14,562	1,731	1,259	930
11	3,698	2,085	1,494	5,960	6,082	1,384	823	2,345	1,948	4,194	19,602	1,606	762
12	1,572	2,425	184	927	6,265	5,688	732	1,356	590	418	473	35,259	1,219
13	395	790	70	0	1,643	5,657	710	433	172	70	566	1,165	9,839
14	1,975	2,409	539	363	771	2,025	4,811	2,238	634	235	1,762	699	2,143
15	1,015	787	44	347	902	643	706	4,519	1,919	217	632	475	1,279
16	327	341	241	635	0	770	536	519	816	414	289	0	205
17	334	618	712	651	642	0	206	0	0	652	991	0	460
18	1,086	1,475	326	729	3,522	209	429	144	1,645	208	2,909	689	114
19	0	139	0	0	532	178	0	0	50	153	0	1,876	1,714
20	653	640	74	0	287	1,552	756	291	0	92	61	100	2,740
21	0	430	81	52	135	712	383	418	55	0	69	0	782
22	0	238	0	114	24	214	28	230	404	0	0	260	0
23	495	275	0	0	34	0	189	844	515	166	76	104	0
24	237	988	0	358	621	159	115	0	0	44	623	0	0
25	375	355	0	140	525	0	0	239	729	0	773	45	0
26	32	50	305	220	4,923	50	0	208	69	570	138	98	0
Total	55,211	67,483	25,430	40,618	91,926	85,791	44,669	74,148	45,260	34,574	53,743	71,915	60,021

Zone	14	15	16	17	18	19	20	21	22	23	24	25	26	Total
1	1,392	929	690	741	1,331	218	44	53	107	106	470	885	0	59,417
2	1,403	742	1,366	117	1,214	0	38	145	110	527	262	245	159	39,874
3	469	459	703	57	313	0	0	90	0	0	338	360	0	21,211
4	599	74	881	767	958	0	0	204	0	138	1,107	351	361	55,239
5	436	786	1,142	220	2,675	71	0	152	0	90	328	494	1,018	66,833
6	2,454	1,335	577	264	1,025	864	232	186	0	250	100	0	192	104,476
7	4,821	969	706	0	627	476	196	285	388	0	96	268	310	40,514
8	1,964	6,755	2,236	0	1,491	0	0	291	1,806	2,453	0	0	511	82,138
9	673	1,292	3,466	0	534	191	0	213	343	893	465	82	447	50,879
10	1,007	162	659	577	867	0	0	0	69	0	2,587	107	149	32,391
11	499	751	469	1,296	4,643	88	0	0	97	108	725	674	690	54,365
12	635	117	0	0	2,448	127	0	0	147	0	0	154	760	58,296
13	11,393	23	0	105	105	0	72	0	0	0	0	0	0	21,582
14	12,849	549	528	197	950	0	0	616	145	0	0	0	84	21,449
15	202	10,933	1,426	0	59	0	242	0	2,110	485	0	0	0	16,322
16	317	247	3,816	0	53	0	0	0	0	730	0	152	0	5,975
17	0	0	0	4,235	0	0	0	0	0	0	2,753	1,157	0	9,176
18	98	152	337	0	14,481	0	0	0	34	0	308	1,372	164	15,363
19	0	0	126	0	58	6,606	0	0	0	62	0	0	76	11,386
20	1,288	201	254	0	53	0	22,469	469	0	0	0	0	0	30,184
21	2,023	58	361	0	81	0	0	4,803	308	119	0	170	0	8,517
22	196	389	619	0	305	0	0	0	10,240	0	80	0	0	11,832
23	0	0	4,622	90	519	0	0	0	0	28,181	0	0	0	30,879
24	0	0	638	911	304	0	0	0	0	0	53,470	0	0	56,615
25	0	0	0	0	2,063	0	180	392	0	0	244	21,642	371	26,010
26	108	133	0	0	2,181	0	0	0	0	0	0	442	10,641	17,746
Total	44,826	27,056	25,622	9,577	39,338	8,641	23,473	7,899	15,904	34,142	63,333	28,555	15,933	948,669

2. Medium Zone OD Matrix by Purpose (School)

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13
1	7,069	2,970	786	3,476	3,043	2,104	592	1,266	118	639	1,083	87	44
2	1,334	2,296	1,137	111	555	316	778	1,691	0	112	107	835	367
3	311	509	2,855	887	294	0	0	987	0	0	479	0	0
4	932	274	317	7,948	1,104	1,001	0	623	317	531	1,068	41	0
5	985	258	196	802	10,359	1,229	675	453	82	307	948	385	0
6	1,633	683	158	431	1,151	5,770	923	1,231	0	100	272	934	384
7	610	660	122	80	182	1,102	4,056	1,136	0	0	0	398	183
8	700	990	867	666	110	160	1,746	18,916	3,290	295	145	218	149
9	371	750	1,605	0	0	0	468	4,950	5,797	0	567	0	0
10	44	956	1,258	217	56	115	0	385	58	3,224	3,959	0	0
11	794	0	540	2,996	1,015	455	0	510	134	767	5,071	105	0
12	363	91	0	118	897	811	92	137	1,876	0	140	10,046	268
13	271	128	60	0	182	827	336	44	0	0	88	243	1,970
14	485	231	0	109	0	594	1,629	446	55	0	0	0	289
15	448	0	116	139	188	264	580	4,588	0	0	69	232	0
16	0	126	375	160	0	0	160	1,503	287	0	0	0	0
17	0	0	551	281	281	0	0	0	0	1,106	551	0	0
18	540	358	0	267	616	86	0	478	0	1,048	560	0	0
19	102	0	0	0	0	0	0	0	0	0	0	690	0
20	0	142	0	0	0	73	0	0	0	0	0	48	0
21	0	0	0	0	0	0	0	458	264	0	0	0	0
22	0	0	0	0	0	0	0	81	278	0	70	0	0
23	764	189	1,621	0	220	231	0	2,110	758	0	185	0	0
24	0	0	0	186	0	0	0	0	0	0	0	0	0
25	0	0	0	0	134	0	0	111	0	0	45	0	0
26	447	81	0	0	1,282	0	0	159	0	0	130	0	0
Total	18,203	11,692	12,564	18,874	21,669	15,138	12,035	42,263	13,314	8,129	15,537	14,262	3,654

Zone	14	15	16	17	18	19	20	21	22	23	24	25	26	Total
1	302	169	0	0	366	0	0	96	0	0	118	286	210	24,824
2	188	0	95	0	369	0	0	0	0	0	0	253	0	10,544
3	0	121	0	0	0	0	0	0	0	0	64	94	0	6,601
4	317	0	0	486	0	0	0	0	0	0	56	0	0	15,015
5	112	0	0	0	1,016	0	0	0	112	0	49	98	50	18,116
6	425	0	0	88	470	0	0	0	0	0	0	0	0	14,653
7	729	0	0	0	0	0	0	0	0	0	0	61	0	9,319
8	108	181	292	0	0	0	0	0	0	440	0	421	0	29,694
9	189	371	940	0	190	190	0	0	0	189	0	138	0	16,715
10	374	0	123	808	2,080	0	0	0	56	0	453	0	0	14,166
11	394	0	0	105	1,198	0	0	0	0	0	0	387	124	14,595
12	0	0	0	0	257	0	0	0	0	0	0	0	0	15,096
13	425	0	187	0	0	0	48	0	0	190	0	0	0	4,999
14	3,366	0	0	187	0	0	0	107	0	0	0	0	55	7,553
15	0	2,973	88	134	235	0	0	232	696	70	0	0	0	11,052
16	323	0	1,752	160	0	0	0	0	0	160	0	427	0	5,433
17	0	0	0	1,935	0	0	0	0	0	0	2,228	0	0	6,933
18	0	0	0	0	3,888	0	0	0	0	134	0	0	582	8,557
19	0	0	0	0	0	1,032	0	0	0	0	0	0	0	1,824
20	0	0	269	0	0	0	2,572	142	0	0	0	0	0	3,246
21	693	231	0	0	231	0	0	3,069	0	0	0	0	0	4,946
22	0	0	278	0	0	0	0	0	9,513	0	0	0	0	10,220
23	379	0	0	0	801	0	0	0	0	16,316	0	427	0	24,001
24	0	0	0	203	203	0	0	0	0	0	10,689	0	0	11,281
25	0	0	171	0	906	0	0	0	0	0	0	18,524	0	19,891
26	0	0	0	0	3,540	0	0	0	0	0	0	0	6,931	12,570
Total	8,324	4,046	4,195	4,106	15,750	1,222	2,620	3,646	10,377	17,499	13,657	21,116	7,952	321,844

3. Medium Zone OD Matrix by Purpose (Private)

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13
1	11,968	7,951	960	4,337	4,443	2,382	1,621	3,827	462	3,072	2,276	473	1,324
2	4,392	14,191	1,691	2,368	2,650	4,362	1,601	3,193	1,929	1,003	1,201	349	477
3	1,417	5,137	6,736	1,943	1,531	200	174	1,530	793	1,970	832	121	533
4	3,154	3,517	2,393	15,836	5,525	2,157	555	1,706	367	1,351	736	1,527	356
5	5,740	7,975	1,945	4,307	25,593	3,545	1,724	3,776	1,742	5,403	3,775	1,698	866
6	3,449	9,552	777	2,402	4,805	19,775	2,979	3,387	2,114	1,294	1,434	1,210	4,535
7	3,052	6,845	394	851	1,208	2,014	7,880	2,382	401	780	972	297	1,627
8	1,786	12,117	1,244	1,409	3,278	3,172	5,297	22,079	5,398	795	1,357	51	264
9	1,741	7,084	1,244	977	1,701	4,716	117	3,236	11,995	1,233	1,431	1,147	0
10	3,039	3,975	2,528	1,319	1,694	982	69	1,415	892	7,148	5,318	0	911
11	2,786	11,036	3,532	6,788	7,490	2,122	1,473	2,399	1,315	7,612	21,485	1,166	915
12	1,471	7,825	140	774	6,900	8,269	244	512	494	779	486	14,702	1,101
13	1,903	2,655	201	122	822	5,863	493	242	281	122	109	547	2,751
14	2,312	8,567	371	567	1,374	1,582	4,893	2,355	680	856	557	395	1,188
15	341	6,227	423	1,017	740	3,091	586	3,251	1,490	264	227	2,536	0
16	510	1,309	1,731	0	346	119	56	584	2,351	66	327	0	0
17	121	700	700	675	2,741	1,857	0	1,476	353	2,583	493	0	0
18	2,910	7,365	1,042	1,513	5,439	1,301	284	1,042	192	986	6,024	749	354
19	0	262	0	0	1,269	58	65	0	0	0	0	1,844	0
20	48	2,254	308	0	1,055	816	1,003	111	0	0	0	438	1,020
21	419	231	142	0	87	195	583	0	0	0	0	0	69
22	502	1,579	40	422	98	28	139	369	754	526	0	736	0
23	259	6,538	2,403	323	928	365	0	842	2,291	192	373	0	0
24	105	1,285	472	119	340	0	61	133	98	1,015	0	0	0
25	58	1,750	160	387	2,364	260	0	195	274	171	2,534	107	0
26	66	790	684	844	3,938	1,351	189	365	0	0	622	2,152	0
Total	53,549	138,717	32,261	49,300	88,359	70,582	32,086	60,407	36,666	39,221	52,569	32,245	18,291

Zone	14	15	16	17	18	19	20	21	22	23	24	25	26	Total
1	329	123	219	536	1,195	0	0	222	0	247	0	0	424	48,391
2	1,106	1,104	441	122	744	0	0	371	0	0	483	364	0	44,142
3	0	384	91	185	197	0	308	0	0	0	61	0	261	24,404
4	150	435	0	221	1,724	317	0	506	0	0	1,280	0	0	43,813
5	869	1,014	873	185	3,523	0	74	101	325	0	216	2,357	292	77,918
6	586	196	114	114	84	196	0	1,010	0	75	0	131	0	60,219
7	2,584	438	318	0	0	0	0	262	102	70	61	223	0	32,761
8	1,068	2,191	0	208	550	0	0	216	526	733	0	29	1,114	64,882
9	861	876	2,356	0	1,659	0	0	187	0	0	227	172	0	42,960
10	669	25	236	905	1,423	0	0	0	0	0	692	0	0	33,240
11	951	0	102	445	4,176	0	0	1,221	0	65	297	2,384	244	80,004
12	760	371	426	0	781	442	177	0	74	95	0	0	917	47,740
13	3,896	0	0	240	120	0	0	0	0	0	0	0	0	20,367
14	10,656	302	88	144	580	0	204	782	145	0	0	353	0	38,951
15	120	8,017	0	0	245	0	0	58	2,251	620	0	0	0	31,504
16	0	355	5,483	0	0	0	0	0	0	1,113	0	51	0	14,401
17	144	0	0	3,306	207	0	0	0	0	0	2,487	0	0	17,843
18	375	0	375	345	12,297	0	0	55	0	0	48	760	189	43,645
19	0	0	0	0	147	2,269	0	0	0	0	0	129	140	6,183
20	1,011	0	89	0	0	0	8,912	40	0	36	0	84	0	17,225
21	1,667	138	0	0	231	0	80	9,315	0	334	0	187	0	13,678
22	0	849	98	0	0	0	0	0	9,520	160	212	0	0	16,032
23	0	0	1,964	0	137	0	0	122	250	16,679	76	0	0	33,742
24	0	0	53	1,308	458	0	0	0	0	473	10,585	171	0	16,676
25	456	0	109	0	3,717	0	0	0	0	0	60	20,381	0	32,983
26	0	81	0	0	6,596	0	0	0	0	0	0	189	16,681	34,548
Total	28,258	16,899	13,435	8,264	40,791	3,224	9,755	14,468	13,193	20,700	16,785	27,965	20,262	938,252

4. Medium Zone OD Matrix by Purpose (Business)

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13
1	4,185	2,655	193	1,103	4,404	657	1,706	748	847	973	837	564	489
2	1,804	4,769	924	224	1,986	701	1,092	1,096	405	158	338	48	557
3	190	504	1,094	692	1,069	126	183	428	350	597	386	276	185
4	469	635	0	5,574	1,572	68	376	736	368	291	1,018	419	0
5	2,346	1,490	973	1,756	11,292	1,735	728	1,223	98	575	2,655	955	58
6	2,471	3,377	324	598	2,410	6,442	1,555	523	372	0	2,011	956	200
7	414	2,350	0	637	1,810	836	3,450	991	116	167	403	230	719
8	506	1,311	687	533	1,607	748	1,488	10,166	785	91	782	0	23
9	1,661	2,178	666	268	1,120	0	116	3,284	7,619	789	453	423	591
10	458	479	270	716	2,265	733	13	196	63	3,511	389	186	177
11	1,730	2,893	663	2,127	4,552	958	175	460	1,246	1,287	10,728	319	0
12	419	673	185	74	3,186	778	204	555	64	53	192	10,911	744
13	784	447	0	112	510	1,323	1,447	452	78	310	568	178	1,234
14	299	689	578	350	365	934	2,580	1,269	350	0	4,107	615	883
15	43	1,051	84	191	821	114	0	2,181	582	230	0	697	244
16	0	343	51	126	365	0	434	250	975	524	207	67	383
17	0	1,374	0	765	540	0	0	0	207	3,265	0	0	0
18	98	1,048	333	1,000	7,380	504	166	212	199	183	2,036	598	153
19	0	154	153	0	2,576	231	63	0	0	0	205	2,052	88
20	241	661	0	48	392	204	653	369	0	0	106	404	771
21	88	432	44	0	499	299	471	462	0	0	0	0	268
22	0	350	36	29	652	64	16	322	348	0	28	427	0
23	0	0	0	76	1,502	0	186	944	1,860	0	178	88	185
24	110	1,069	77	0	1,015	0	0	0	85	247	876	0	0
25	847	628	238	770	4,360	0	94	0	1,041	109	1,711	336	47
26	453	3,461	0	142	11,356	178	166	777	0	0	511	2,830	0
Total	19,616	35,021	7,573	17,911	69,606	17,633	17,362	27,644	18,058	13,360	30,725	23,579	7,999

Zone	14	15	16	17	18	19	20	21	22	23	24	25	26	Total
1	0	324	453	0	240	0	196	0	0	0	0	0	63	20,637
2	362	45	109	144	357	0	0	87	68	0	83	0	138	15,495
3	523	0	0	0	330	0	155	0	124	0	277	0	0	7,489
4	0	68	0	97	1,214	120	48	0	0	0	0	252	0	13,325
5	100	806	364	327	1,090	0	281	142	0	469	444	233	129	30,269
6	227	218	473	0	670	0	132	0	185	107	0	0	0	23,251
7	1,039	146	154	0	310	0	379	271	0	94	0	0	0	14,516
8	1,208	1,647	375	494	171	0	0	221	114	1,273	0	87	265	24,582
9	660	1,100	1,453	0	330	0	205	0	112	113	0	0	0	23,141
10	0	230	263	1,313	0	0	0	0	0	0	249	70	174	11,755
11	0	106	185	270	1,294	0	0	0	0	0	83	480	0	29,556
12	158	143	0	0	799	58	190	0	0	0	0	0	625	20,011
13	395	0	0	0	301	0	349	0	0	0	0	0	0	8,488
14	8,882	415	196	0	356	0	0	340	0	529	104	0	182	24,023
15	194	5,706	0	0	134	0	132	0	586	0	0	0	0	12,990
16	0	528	2,548	0	238	0	0	0	0	642	0	0	490	8,171
17	0	0	0	3,584	207	0	0	0	0	0	1,827	0	0	11,769
18	100	1,221	0	0	7,347	0	0	0	0	0	0	361	230	23,169
19	0	0	47	0	801	4,419	0	0	0	0	0	0	0	10,789
20	937	0	0	0	461	0	9,317	690	0	0	0	100	0	15,354
21	2,048	0	94	94	0	0	81	8,003	0	0	0	392	52	13,327
22	138	491	116	0	68	0	0	0	8,779	0	0	0	0	11,864
23	0	0	559	0	249	190	0	0	0	9,007	93	0	0	15,117
24	0	143	199	1,912	53	0	0	0	0	136	10,656	59	0	16,637
25	0	0	452	229	3,866	0	0	0	0	0	169	16,636	598	32,131
26	0	0	0	0	4,052	0	0	0	0	0	0	190	9,551	33,667
Total	16,971	13,337	8,040	8,464	24,938	4,787	11,465	9,754	9,968	12,370	13,985	18,860	12,497	471,523

5. Medium Zone OD Matrix by Purpose (All Purpose)

Zone	1	2	3	4	5	6	7	8	9	10	11	12	13
1	35,649	19,477	4,395	12,100	20,410	8,775	7,492	9,156	4,487	7,413	7,111	5,458	3,345
2	12,668	30,869	5,017	4,709	7,488	9,248	6,675	8,333	4,491	2,761	3,416	2,394	3,467
3	3,298	8,937	17,994	4,640	3,263	1,062	690	4,257	2,884	3,761	2,470	1,144	1,342
4	8,517	8,457	4,271	41,714	14,855	6,441	2,801	6,741	3,752	4,842	7,688	5,101	2,760
5	13,818	13,006	3,948	9,245	78,142	10,983	4,084	9,554	2,977	7,237	12,653	6,410	3,275
6	11,173	19,722	2,475	5,543	12,956	74,503	10,456	7,949	4,517	2,141	5,966	15,190	22,683
7	6,653	13,761	1,265	3,520	6,318	6,800	25,442	7,137	1,820	1,601	2,362	2,429	8,742
8	7,639	24,307	5,199	4,247	10,831	7,306	13,487	82,142	14,864	2,046	3,942	1,915	4,378
9	6,412	17,248	6,069	3,106	4,466	5,463	4,025	19,716	40,075	3,303	5,006	1,881	1,773
10	5,421	6,092	5,071	3,766	5,106	3,117	1,055	2,939	2,625	28,445	11,397	1,445	2,018
11	9,008	16,014	6,229	17,871	19,139	4,919	2,471	5,714	4,643	13,860	56,886	3,196	1,677
12	3,825	11,014	509	1,893	17,248	15,546	1,272	2,560	3,024	1,250	1,291	70,918	3,332
13	3,353	4,020	331	234	3,157	13,670	2,986	1,171	531	502	1,331	2,133	15,794
14	5,071	11,896	1,488	1,389	2,510	5,135	13,913	6,308	1,719	1,091	6,426	1,709	4,503
15	1,847	8,065	667	1,694	2,651	4,112	1,872	14,539	3,991	711	928	3,940	1,523
16	837	2,119	2,398	921	711	889	1,186	2,856	4,429	1,004	823	67	588
17	455	2,692	1,963	2,372	4,204	1,857	206	1,476	560	7,606	2,035	0	460
18	4,634	10,246	1,701	3,509	16,957	2,100	879	1,876	2,036	2,425	11,529	2,036	621
19	102	555	153	0	4,377	467	128	0	50	153	205	6,462	1,802
20	942	3,697	382	48	1,734	2,645	2,412	771	0	92	167	990	4,531
21	507	1,093	267	52	721	1,206	1,437	1,338	319	0	69	0	1,119
22	502	2,167	76	565	774	306	183	1,002	1,784	526	98	1,423	0
23	1,518	7,002	4,024	399	2,684	596	375	4,740	5,424	358	812	192	185
24	452	3,342	549	663	1,976	159	176	133	183	1,306	1,499	0	0
25	1,280	2,733	398	1,297	7,383	260	94	545	2,044	280	5,063	488	47
26	998	4,382	989	1,206	21,499	1,579	355	1,509	69	570	1,401	5,080	0
Total	146,579	252,913	77,828	126,703	271,560	189,144	106,152	204,462	113,298	95,284	152,574	142,001	89,965

Zone	14	15	16	17	18	19	20	21	22	23	24	25	26	Total
1	2,023	1,545	1,362	1,277	3,132	218	240	371	107	353	588	1,171	697	149,013
2	3,059	1,891	2,011	383	2,684	0	38	603	178	527	828	862	297	104,869
3	992	964	794	242	840	0	463	90	124	0	740	454	261	57,874
4	1,066	577	881	1,571	3,896	437	48	710	0	138	2,443	603	361	122,680
5	1,517	2,606	2,379	732	8,304	71	355	395	437	559	1,037	3,182	1,489	182,857
6	3,692	1,749	1,164	466	2,249	1,060	364	1,196	185	432	100	131	192	198,934
7	9,173	1,553	1,178	0	937	476	575	818	490	164	157	552	310	91,392
8	4,348	10,774	2,903	702	2,212	0	0	728	2,446	4,899	0	537	1,890	192,803
9	2,383	3,639	8,215	0	2,713	381	205	400	455	1,195	692	392	447	122,710
10	2,050	417	1,281	3,603	4,370	0	0	0	125	0	3,981	177	323	83,103
11	1,844	857	756	2,116	11,311	88	0	1,221	97	173	1,105	3,925	1,058	169,294
12	1,553	631	426	0	4,285	627	367	0	221	95	0	154	2,302	137,448
13	16,109	23	187	345	526	0	469	0	0	190	0	0	0	49,872
14	35,753	1,266	812	528	1,886	0	204	1,845	290	529	104	353	321	66,804
15	516	27,629	1,514	134	673	0	374	290	5,643	1,175	0	0	0	54,022
16	640	1,130	13,599	160	291	0	0	0	0	2,645	0	630	490	22,593
17	144	0	0	13,060	414	0	0	0	0	0	9,295	1,157	0	36,338
18	573	1,373	712	345	38,013	0	0	55	34	134	356	2,493	1,165	64,786
19	0	0	173	0	1,006	14,326	0	0	0	62	0	129	216	29,187
20	3,236	201	612	0	514	0	43,270	1,341	0	36	0	184	0	63,242
21	6,431	427	455	94	543	0	161	25,190	308	453	0	749	52	35,041
22	334	1,729	1,111	0	373	0	0	0	38,052	160	292	0	0	47,910
23	379	0	7,145	90	1,706	190	0	122	250	70,183	169	427	0	99,650
24	0	143	890	4,334	1,018	0	0	0	0	609	85,400	230	0	96,677
25	456	0	732	229	10,552	0	180	392	0	0	473	77,183	969	101,109
26	108	214	0	0	16,369	0	0	0	0	0	0	821	43,804	84,262
Total	98,379	61,338	51,292	30,411	120,817	17,874	47,313	35,767	49,442	84,711	107,760	96,496	56,644	2,464,470

Appendix F

SUMMARY OF QUANTITY AND COST ESTIMATE

Appendix F

SUMMARY OF QUANTITY AND COST ESTIMATE

Table F-1 Summary of quantity

Work Item	Description			Unit	Total Quantity	Remark
Earth Work	excavation(common soil)		transportation distance :10km	m3	98,290.6	underpass
	leveling gravel		t=10cm	m2	1,615.4	〃
	backfilling		borrowed soil	m3	32,436.0	〃
	planting		trees,grass	m2	5,093.0	
	transplanting			nos	690.0	h=3m,dia. of trees =20cm
	demolition work		existing bicycle lane	m2	42,927.5	waste、trans. distance: 10km
			existing pedestrian	m2	63,180.0	〃
			existing divider(W=2m)	m	3,460.0	〃
			existing pedestrian bridge	br.	2.0	〃
Road Work	new trunk busway					
		existing road surface painting	color painting	m2	17,212.5	
		asphalt pavement	color pavement t=3cm	m2	42,927.5	
		concrete pavement	t=21cm	m2	42,927.5	
		base course	asphalt stabilized t=10cm	m2	42,927.5	
			lime stabilized t=14cm	m2	42,927.5	
		curb		m	3,460.0	
	new frontage road					
		concrete pavement	t=21cm	m2	11,040.0	
		base course	asphalt stabilized t=10cm	m2	11,040.0	
			lime stabilized t=14cm	m2	11,040.0	
		curb		m	2,760.0	
	pedestrian		permeable pavement	m2	52,140.0	
Incidental Work	road marking		chatter-bar	m	12,265.0	
			lane marking	m	8,900.0	
	sewerage		d=1.25m	m	3,730.0	
	guardrail			m	3,360.0	
	road sign		cantilever type	nos	18.0	
			single column type	nos	18.0	
	traffic signal at intersection			nos	18.0	
	bus stop					
		Type-A	W=2m,L=20m,A=40m2	nos	8.0	roof,chairs,sign board
		Type-B	W=2m,L=30m,A=60m2	nos	18.0	〃
		Type-C	W=4.5m,L=20m,A=90m2	nos	12.0	〃
		Type-D	W=3m,L=20m,A=60m2	nos	4.0	〃
	bicycle parking place					
		Type-A	2 stories	nos	2.0	floor area:2,000m2
		Type-B	2 stories	nos	4.0	floor area:600m2

Table F-1 Summary of quantity (continue)

Work Item	Description			Unit	Total Quantity	Remark
Pedestrian Bridge	superst-ucture	Type-A(length of bridge=34.2m)	Type-A steel girder	br.	2.0	fabrication, erection
			floor concrete work	m3	17.5	
			floor pavement (t=3cm)	m2	205.4	
			stairs steel girder	br.	2.0	fabrication, erection
			stairs mortar work	m3	3.5	
			stairs pavement(t=3cm)	m2	115.2	
			handrail	m	259.0	
			painting	m2	2,150.4	
		Type-B(length of bridge=37.2m)	Type-B steel girder	br.	3.0	fabrication, erection
			floor concrete work	m3	27.8	
			floor pavement (t=3cm)	m2	357.7	
			stairs steel girder	br.	3.0	fabrication, erection
			stairs mortar work	m3	5.2	
			stairs pavement(t=3cm)	m2	172.8	
			handrail	m	406.5	
			painting	m2	3,364.5	
	Foundation ·Substructure		steel pier(4piers/br.)	br.	5.0	fabrication, erection
			drainage	m	146.0	
			piling concrete work	m3	280.0	cast-in site pile d=1.5m
			piling excavation work	m	135.0	〃
Underpass	Permanent Work					
		retaining wall	U type	m3	7,329.3	
		box culvert	Type-A(5.5×4.3m)	m	1,267.9	drainage
			Type-B(4.0×4.3m)	m	317.4	〃
		entrance	roof,stairs,etc	nos	4.0	
		waterproof		m2	29,730.0	
		lighting		m	1,787.6	
		leveling concrete	t=10cm	m3	1,615.4	
	Temporary Work					
		Pile	H steel pile	m	19,069.9	
		lagging	lumber board(t=5cm)	m2	17,876.5	
		timbering	wale,strut	t	2,293.8	

Table F-2 Unit-price of labor·material·equipment

1. Labor Cost

Item	Unit	Unit-price(Yuan)	remark
worker	day	18.00	8 hours/day
operator	day	22.47	

2. Material Cost

Item	Unit	Unit-price(Yuan)	remark
timber	m3	1,064.80	
processed timber	m3	1,255.50	
plywood(2440×1220×12mm)	m2	41.58	
reinforcing bar Ⅰ grade	t	2,378.00	Dia. Within 10mm
reinforcing bar Ⅱ grade	t	2,460.00	
PC steel bar	t	3,600.00	
PC steel wire	t	5,000.00	
PC steel strand	t	7,000.00	
steel	t	3,000.00	
section steel(shaped)	t	5,000.00	
road sign(steel plate)	t	7,000.00	
road sign(aluminium plate)	t	8,750.00	
reinforcing mesh	Kg	6.50	
lighting	t	160.00	
electrical wire	t	2.67	
paint for road surface	Kg	14.72	
ordinary portland cement	t	453.30	
fine aggregate	m3	47.31	
coarse aggregate	m3	50.05	
asphalt	t	1,899.50	
lime	t	134.55	
stone dust	m3	31.50	
grass	m2	1.80	
borrowed soil	m3	5.00	
gasoline	Kg	2.90	
diesel	Kg	2.17	
heavy oil	Kg	1.10	
electricity	Kw-hr	0.35	
firewood	Kg	0.21	
water	m3	0.45	

Table F-2 Unit-price of labor· material ·equipment(continue)

3. Equipment Cost

Item	Unit	Unit-price(Yuan)	remark
bulldozer(60kw)	nos·day	271.35	8hours/day
bulldozer(135kw)	nos·day	834.05	
motor grader（90kw)	nos·day	436.89	
back hoe(0.6m3)	nos·day	457.43	
shovel(1.0m3 level)	nos·day	337.63	
truck(6t)	nos·day	225.45	
dump truck(10t)	nos·day	480.88	
truck crane (12tf)	nos·day	513.42	
truck crane (25tf)	nos·day	1,013.57	
crawler crane(30tf)	nos·day	814.40	
macadam road roller(8t)	nos·day	208.57	
macadam road roller(15t)	nos·day	297.14	
tire roller(9t)	nos·day	263.58	
vibrating roller(12tf)	nos·day	464.19	
concrete mixer(0.4m3)	nos·day	70.04	
agitating truck(5m3)	nos·day	957.68	
asphalt finisher(8t)	nos·day	1,145.05	
asphalt mixing plant(30t/hr)	nos·day	2,318.71	
asphalt distributor（4000l)	nos·day	398.12	
generator(60kw)	nos·day	316.14	
generator(200kw)	nos·day	812.66	
water pump（d=150mm)	nos·day	90.33	
concrete pump vehicle（110l/h)	nos·day	105.08	
boiler(1t/h)	nos·day	436.15	
concrete cutting machine	nos·day	42.94	
road sprinkler(4000L)	nos·day	263.07	
tamping machine	nos·day	88.70	
breaker	nos·day	191.92	
rock auger	nos·day	647.76	
crawler base machine	nos·day	1,542.53	
vibrating hammer(50t)	nos·day	1,085.22	
winch(5t)	nos·day	73.21	

Table F-3 Summary of Unit Construction Cost of Work

Work Item	Content of Work		Unit		Direct Construction Cost （RMB）							Indirect Cost (RMB)	Direct Con. Cost+Indirect Cost（RMB）	Unit-Cost		Remark
					direct cost				other direct cost	site expense	sub. total			unit	RMB	
					labor cost	material cost	equip. cost	sub. total								
Earth Work	excavation(common soil)	transportation distance :10km	1,000	m3	345	0	19,242	19,587	3,110	2,290	24,987	1,153	26,140	m3	26	underpass
	leveling gravel	t=10cm	100	m2	1	640	117	758	138	127	1,023	44	1,067	m2	10	〃
	backfilling	borrowed soil	100	m3	126	550	723	1,399	255	233	1,887	82	1,969	m3	19	〃
	planting	trees,grass	100	m2	450	1,807	0	2,257	138	127	2,522	44	2,566	m2	25	
	transplanting		100	each	3,600	0	10,727	14,327	2,611	2,387	19,325	835	20,159	each	201	h=3m,dia. of trees =20cm
	removing work	existing carriage way	1,000	m2	1,650	135	14,411	16,196	2,473	2,418	21,088	995	22,083	m2	22	waste、trans. distance: 10km
		existing bicycle lane	1,000	m2	1,641	135	11,727	13,503	2,058	1,990	17,551	821	18,371	m2	18	〃
		existing pedestrian	1,000	m2	1,908	90	7,518	9,516	1,476	1,132	12,124	534	12,658	m2	12	〃
		existing divider(W=2m)	1,000	m2	1,890	90	9,543	11,523	1,735	1,691	14,949	691	15,639	m2	31	〃
		existing pedestrian bridge	1	each	19,193	1,570	167,632	188,395	28,770	28,132	245,297	11,574	256,871	each	256,871	〃
Road Work	existing road surface painting	color painting	100	m2	100	8,280	110	8,490	478	583	9,551	243	9,794	m2	97	
	asphalt pavement	color pavement t=3cm	100	m3	687	167,246	12,688	180,621	2,080	2,538	185,240	1,056	186,295	m2	56	t=3cm
	concrete pavement	t=21cm	1,000	m2	7,752	104,432	21,579	133,763	6,524	7,960	148,247	3,310	151,557	m2	151	
	base course	concrete stabilized t=10cm	1,000	m2	545	25,041	1,049	26,635	2,496	2,282	31,413	798	32,211	m2	32	
		asphalt stabilized t=10cm	1,000	m2	545	18,134	1,049	19,728	2,496	2,282	24,506	798	25,304	m2	25	
		lime stabilized t=14cm	1,000	m2	689	14,590	1,120	16,399	1,690	1,546	19,635	541	20,175	m2	20	
	curb		10	m3	1,481	2,391	57	3,929	174	212	4,316	88	4,404	m	23	standard design(0.15*0.35*1.0m)
	pavement	penetrable pavement	1,000	m2	1,416	75,432	5,981	82,829	4,751	4,517	92,097	1,625	93,722	m2	93	
Incid-ental Work	road marking	cement decelerating road-block	100	m2	244	16,021	455	16,720	2,439	2,313	21,473	831	22,304	m	111	width=0.5m
		normal	100	m2	95	4,620	110	4,825	272	332	5,428	138	5,566	m	55	width=1.0m
	divider(w=2m)	planting,guardrail	100	m	6,877	18,819	7,280	32,976	1,446	1,765	36,188	734	36,922	m	369	
	sewerage	d=1.25m	13	m	2,440	3,417	505	6,362	331	658	7,351	298	7,649	m	588	standard pipe length =13m
	guardrail		100	m	1,391	12,197	6,681	20,269	2,637	2,411	25,318	843	26,161	m	261	
	road sign	cantilever type	10	each	3,493	51,668	1,027	56,188	22,367	20,451	99,006	7,153	106,159	each	10,615	
		single column type	10	each	1,260	14,419	818	16,497	2,791	2,552	21,840	893	22,732	each	2,273	
	traffic signal at intersection		1	each	6,942	102,694	2,041	111,677	44,455	40,649	196,781	14,219	211,000	each	211,000	
	bus stop															
	Type-A	W=2m,L=20m,A=40m2	1	each	2,525	36,746	2,139	41,410	1,133	1,551	44,094	653	44,747	each	44,746	roof,chairs,sign board
	Type-B	W=2m,L=30m,A=60m2	1	each	3,788	55,119	3,209	62,115	1,699	2,327	66,141	979	67,120	each	67,120	〃
	Type-C	W=4.5m,L=20m,A=90m2	1	each	5,681	82,679	4,813	93,173	2,549	3,491	99,212	1,469	100,681	each	100,680	〃
	Type-D	W=3m,L=20m,A=60m2	1	each	3,788	55,119	3,209	62,115	1,699	2,327	66,141	979	67,120	each	67,120	〃
	bicycle parking place															
	Type-A	2 stories	1	each	4,629	622,720	19,941	647,290	44,020	79,612	770,921	35,399	806,320	each	806,320	floor area:2,000m2
	Type-B	2 stories	1	each	1,774	188,387	6,930	197,091	13,481	24,116	234,688	10,696	245,384	each	245,384	floor area:600m2
Pede-strian Bridge	superstructure	Type-A steel girder(bridge length=34.2m)	1	each	738	329,927	3,446	334,111	21,550	42,833	398,494	19,407	417,901	each	417,901	fabrication, erection
		Type-B steel girder(bridge length=37.2m)	1	each	738	350,927	3,446	355,111	22,905	45,525	423,541	20,626	444,168	each	444,167	〃
		concrete work	10	m3	56	2,259	213	2,528	163	324	3,016	147	3,162	m3	316	
		stairs steel work	1	each	486	140,097	2,229	142,812	9,211	18,309	170,332	8,295	178,627	each	178,627	fabrication, erection
		stairs mortal work	10	倣3	56	3,727	141	3,924	253	503	4,681	228	4,909	m3	490	
		handrail	100	m	1,391	24,657	6,681	32,729	934	1,856	35,518	841	36,359	m	363	
		painting	100	m2	162	11,698	436	12,296	793	1,576	14,666	714	15,380	m2	153	
	Foundation・Substructure	steel pier(4piers/br.)	1	each	853	79,457	3,770	84,080	5,423	10,779	100,282	4,884	105,166	each	105,166	fabrication, erection
		drainage	10	m	72	541	359	972	63	125	1,159	57	1,216	m	121	
		piling concrete work	10	m3	954	4,647	597	6,198	680	768	7,645	296	7,942	m3	794	
		piling excavation work	10	m	8,321	211	84	8,616	1,404	1,283	11,303	449	11,752	m	1,175	
Unde-rpass	Permanent Work															
	retaining wall	U type	10	m3	999	4,875	1,617	7,491	548	1,090	9,129	494	9,623	m3	962	
	box culvert	Type-A(5.5×4.3m)	20	m	24,488	147,117	23,262	194,867	5,930	11,785	212,582	5,340	217,922	m	10,896	drainage,standard culvert l..=20m
		Type-B(4.0×4.3m)	20	m	16,407	98,568	15,586	130,561	3,973	7,896	142,430	3,578	146,008	m	7,300	〃
	entrance	roof,stairs,etc	1	each	5,573	40,311	10,678	56,562	3,150	3,071	62,783	1,124	63,907	each	63,906	
	waterproof		100	m2	1,081	15,140	0	16,221	1,046	2,080	19,347	942	20,289	m2	202	
	lighting		1,000	m	25,835	228,567	13,797	268,199	16,584	32,961	317,744	14,934	332,678	m	332	
	leveling concrete	t=10cm	10	m3	149	1,801	172	2,122	137	272	2,531	123	2,655	m3	265	
	Temporary Work															
	Pile	H steel pile	1	each	221	1,705	3,750	5,676	1,034	946	7,656	331	7,987	each	1,064	drilling length＝7.5m
	lagging	lumber board(t=5cm)	10	m2	54	153	0	207	38	35	279	12	291	m2	29	
	timbering	wale,strut	10	t	426	1,792	2,432	4,650	848	775	6,273	271	6,544	t	654	

Table F-4 Summary of Project Cost

Work Item	Content of Work		Unit	Total Quantity	Unit Cost(RMB)	Total Cost(RMB)
Direct Construction Cost						
Road Work	new trunk busway					
	existing road surface painting	color painting	m2	17,212.5	97	1,669,612
	asphalt pavement	color pavement t=3cm	m2	42,927.5	56	2,403,940
	concrete pavement	t=21cm	m2	42,927.5	151	6,482,052
	base course	asphalt stabilized t=10cm	m2	42,927.5	25	1,073,187
		lime stabilized t=14cm	m2	42,927.5	20	858,550
	curb		m	3,460.0	23	79,580
	new frontage road					
	concrete pavement	t=21cm	m2	11,040.0	151	1,667,040
	base course	asphalt stabilized t=10cm	m2	11,040.0	25	276,000
		lime stabilized t=14cm	m2	11,040.0	20	220,800
	curb		m	2,760.0	23	63,480
	pedestrian	permeable pavement	m2	52,140.0	93	4,849,020
Total Cost of Road Work						19,643,261
Incid-ental Work	road marking	chatter-bar	m	12,265.0	111	1,361,415
		lane marking	m	8,900.0	55	489,500
	road sign	cantilever type	each	18.0	10,615	191,070
		single column type	each	18.0	2,273	40,914
	guardrail		m	3,360.0	261	876,960
	planting	trees,grass	m2	5,093.0	25	127,324
	Traffic signal at intersection		each	18.0	211,000	3,798,000
	bus stop					
	Type-A	W=2m,L=20m,A=40m2	each	8.0	44,746	357,968
	Type-B	W=2m,L=30m,A=60m2	each	18.0	67,120	1,208,160
	Type-C	W=4.5m,L=20m,A=90m2	each	12.0	100,680	1,208,160
	Type-D	W=3m,L=20m,A=60m2	each	4.0	67,120	268,480
	bicycle parking place					
	Type-A	2 stories	each	2.0	806,320	1,612,640
	Type-B	2 stories	each	4.0	245,384	981,536
Total Cost of Incidental Work						12,522,127
Other Work	transplanting		each	690.0	201	138,688
	demolition work	existing bicycle lane	m2	42,927.5	18	772,695
		existing pedestrian	m2	63,180.0	12	758,160
		existing divider(W=2m)	m	3,460.0	31	107,260
		existing pedestrian bridge	each	2.0	256,871	513,742
Total Cost of Other Work						2,290,545

Work Item	Content of Work			Unit	Total Quantity	Unit Cost(RMB)	Total Cost(RMB)
Pedestrian Bridge	superstructure	Type-A(length=34.2m)	Type-A steel girder	br.	2.0	417,901	835,802
			floor concrete work	m3	17.5	316	5,517
			floor pavement (t=3cm)	m2	205.4	56	11,502
			stairs steel girder	br.	2.0	178,627	357,254
			stairs mortar work	m3	3.5	490	1,695
			stairs pavement(t=3cm)	m2	115.2	56	6,451
			handrail	m	259.0	363	94,017
			painting	m2	2,150.4	153	329,011
		Type-B(length of bridge=37.2m)	Type-B steel girder	br.	3.0	444,167	1,332,501
			floor concrete work	m3	27.8	316	8,787
			floor pavement (t=3cm)	m2	357.7	56	20,030
			stairs steel girder	br.	3.0	178,627	535,881
			stairs mortar work	m3	5.2	490	2,543
			stairs pavement(t=3cm)	m2	172.8	56	9,676
			handrail	m	406.5	363	147,559
			painting	m2	3,364.5	153	514,768
	Foundation・Substructure		steel pier(4piers/br.)	br.	5.0	105,166	525,830
			drainage	m	146.0	121	17,666
			piling concrete work	m3	280.0	794	222,320
			piling excavation work	m	135.0	1,175	158,625
Total Cost of Pedestrian Bridge							5,137,435
Underpass	Permanent Work	retaining wall	U type	m3	7,329.3	962	7,050,784
		box culvert	Type-A(5.5×4.3m)	m	1,267.9	10,896	13,815,038
			Type-B(4.0×4.3m)	m	317.4	7,300	2,317,020
		entrance	roof,stairs,etc	each	4.0	63,906	255,624
		waterproof		m2	29,730.0	202	6,005,454
		lighting		m	1,787.6	332	593,482
		sewerage	Φ 1.25m	m	3,730.0	588	2,193,240
		leveling gravel	t=10cm	m2	1,615.4	10	16,152
		leveling concrete	t=10cm	m3	1,615.4	265	428,076
	Temporary Work	excavation(common soil)	transportation distance :10km	m3	98,290.6	26	2,555,552
		backfilling	borrowed soil	m3	32,436.0	19	616,282
		Pile	H steel pile	m	19,069.9	1,064	20,290,372
		lagging	lumber board(t=5cm)	m2	17,876.5	29	518,416
		timbering	wale,strut	t	2,293.8	654	1,500,142
Total Cost of Underpass							58,155,634
Total of Direct Construction Cost							97,749,002

Item	Unit	Total Project Cost(RMB)	Remark
1.Direct Construction Cost	each	97,749,002	
2.Construt Equipment Cost	3.00%	2,932,470	1×rate(%)
3.Project Profit	4.00%	3,909,960	1×rate(%)
4.Tax	3.41%	3,466,570	(1+3)×rate(%)
5.Constraction Cost		108,058,002	(1+2+3+4)
6.Administration Cost	10.00%	10,805,800	5× rate(%),research, experiment, survey cost,etc
7.Other Cost	10.00%	10,805,800	5× rate(%)
8.Contingency	15.00%	16,208,700	5× rate(%)
Project Cost		**145,878,302**	(5+6+7+8)

Table F-5 Summary of Local Portion and Foreign Portion

Work Item	Content of Work			Project Cost(RMB)	Local Portion(RMB)	Foreign Portion(RMB)
Direct Construction Cost						
Road Work	new trunk busway					
		existing road surface painting	color painting	1,669,612	1,030,759	638,853
		asphalt pavement	color pavement t=3cm	2,403,940	1,454,608	949,332
		concrete pavement	t=21cm	6,482,052	4,102,245	2,379,807
		base course	asphalt stabilized t=10cm	1,073,187	676,963	396,224
			lime stabilized t=14cm	858,550	543,203	315,347
		curb		79,580	59,389	20,191
	new frontage road					
		concrete pavement	t=21cm	1,667,040	1,055,006	612,034
		base course	asphalt stabilized t=10cm	276,000	174,100	101,900
			lime stabilized t=14cm	220,800	139,700	81,100
		curb		63,480	47,374	16,106
	pedestrian		permeable pavement	4,849,020	2,994,331	1,854,689
Total Cost of Road Work				19,643,261	12,277,676	7,365,585
Incidental Work	road marking		chatter-bar	1,361,415	962,500	398,915
			lane marking	489,500	346,485	143,015
	road sign		cantilever type	191,070	136,463	54,607
			single column type	40,914	29,548	11,366
	guardrail			876,960	651,656	225,304
	planting		trees,grass	127,324	96,061	31,263
	Traffic signal at intersection			3,798,000	2,712,558	1,085,442
	bus stop					
		Type-A	W=2m,L=20m,A=40m2	357,968	251,765	106,203
		Type-B	W=2m,L=30m,A=60m2	1,208,160	849,720	358,440
		Type-C	W=4.5m,L=20m,A=90m2	1,208,160	849,720	358,440
		Type-D	W=3m,L=20m,A=60m2	268,480	188,827	79,653
	bicycle parking place					
		Type-A	2 stories	1,612,640	1,123,201	489,439
		Type-B	2 stories	981,536	683,027	298,509
Total Cost of Incidental Work				12,522,127	8,881,528	3,640,599
Other Work	transplanting			138,688	112,201	26,485
	demolition work		existing bicycle lane	772,695	615,063	157,632
			existing pedestrian	758,160	616,211	141,949
			existing divider(W=2m)	107,260	83,216	24,044
			existing pedestrian bridge	513,742	406,761	106,981
Total Cost of Other Work				2,290,545	1,833,453	457,090

Work Item	Content of Work			Project Cost (RMB)	Local Portion (RMB)	Foreign Portion (RMB)
Pedestrian Bridge	superstructure	Type-A(length=34.2m)	Type-A steel girder	835,802	521,459	314,343
			floor concrete work	5,517	3,509	2,008
			floor pavement (t=3cm)	11,502	7,038	4,464
			stairs steel girder	357,254	223,179	134,075
			stairs mortar work	1,695	1,067	628
			stairs pavement(t=3cm)	6,451	3,947	2,504
			handrail	94,017	60,608	33,409
			painting	329,011	206,880	122,131
		Type-B(length of bridge=37.2m)	Type-B steel girder	1,332,501	831,231	501,270
			floor concrete work	8,787	5,589	3,198
			floor pavement (t=3cm)	20,030	12,256	7,774
			stairs steel girder	535,881	334,769	201,112
			stairs mortar work	2,543	1,601	942
			stairs pavement(t=3cm)	9,676	5,921	3,755
			handrail	147,559	95,123	52,436
			painting	514,768	323,682	191,086
	Foundation・Substructure		steel pier(4piers/br.)	525,830	330,853	194,977
			drainage	17,666	11,929	5,737
			piling concrete work	222,320	151,038	71,282
			piling excavation work	158,625	144,754	13,871
Total Cost of Pedestrian Bridge				5,137,435	3,276,435	1,861,000
Underpass	Permanent Work	retaining wall	U type	7,050,784	4,580,629	2,470,155
		box culvert	Type-A(5.5×4.3m)	13,815,038	9,415,824	4,399,214
			Type-B(4.0×4.3m)	2,317,020	1,579,189	737,831
		entrance	roof,stairs,etc	255,624	164,493	91,131
		waterproof		6,005,454	1,677,049	516,191
		lighting		593,482	4,312,911	1,692,543
		sewerage	ϕ 1.25m	2,193,240	418,235	175,247
		leveling gravel	t=10cm	16,152	293,941	134,135
		leveling concrete	t=10cm	428,076	858,384	1,697,168
	Temporary Work	excavation(common soil)	trans. distance :10km	2,555,552	10,385	5,767
		backfilling	borrowed soil	616,282	326,610	289,672
		Pile	H steel pile	20,290,372	9,645,520	10,644,852
		lagging	lumber board(t=5cm)	518,416	392,810	125,606
		timbering	wale,strut	1,500,142	803,555	696,587
Total Cost of Underpass				58,155,634	34,479,536	23,676,098
Total of Direct Construction Cost				97,749,002	60,748,627	37,000,373

Item	Total Project Cost(RMB)	Local Portion(RMB)	Foreign Portion(RMB)
1.Direct Construction Cost	97,749,002	60,748,627	37,000,373
2.Construt Equipment Cost	2,932,470	2,932,470	0
3.Project Profit	3,909,960	3,909,960	0
4.Tax	3,466,570	3,466,569	0
5.Constraction Cost	108,058,002	71,057,626	37,000,373
6.Administration Cost	10,805,800	9,725,220	1,080,580
7.Other Cost	10,805,800	8,104,350	2,701,450
8.Contingency	16,208,700	11,346,090	4,862,610
Project Cost	**145,878,302**	**100,233,286**	**45,645,013**

Table F-6 Unit-Process Cost

Table F-6-1
Excavation (common soil, transportation distance:10km)

item	construction work			excavation			transportation of excavated soil						Total	
	content of work			back hoe(0.6m3)			transport distance(10km)							
	unit of work			1,000.000 m3			1,000.000 *m3							
	quantity of work			1.000 *1000m3			1.000 *1000m3							
	reference			method of estimation of road project in China 1-5-1			table f-3-2							
	work item	unit	unit-price	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	19.200	19.200	345.000							19.200	345.000
2	other material expenses	RMB												
3	bulldozer (60kw)	day	271.350	1.340	1.340	363.000							1.340	363.000
4	back hoe(0.6m3)	day	457.430	4.020	4.020	1,838.000							4.020	1,838.000
5	truck (6t)	day	225.450					75.590	17,041.766				75.590	17,041.766
6	other small equipment cost	RMB												
7	basic price	RMB	1.000	2,452.000	2,452.000	2,452.000		23,785.000	23,785.000					26,237.000
8	direct cost	RMB				2,546.000			17,041.766					19,587.766
9	other direct cost	%		11.860		290.000			2,820.901					3,110.901
10	site expense	%		8.730		214.000			2,076.431					2,290.431
11	indirect cost	%		3.650		107.000			1,046.905					1,153.905
direct construction cost + indirect cost		RMB				3,157.000			22,986.003					26,143.003
item of direct construction cost		RMB		labor cost 345.000		material cost		equipment cost 19,242.000		direct construction cost 24,989.000				

Table F-6-2
Transportation of excavated soil (common soil,load , carry ,and unload)

item	construction work			transportation of excavated soil									Total	
	content of work			transport distance(1km)			transport distance (add. every 0.5km)							
	unit of work			1,000.000 m 3			1,000.000 m 3							
	quantity of work			1.000 *1000m3			18.000 *0.5km							
	reference			method of estimation of road project in China 1-6-3			method of estimation of road project in China 1-6-4							
	work item	unit	price-price	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	quantity	cost(RMB)
1	worker	man-day												
2	other material expenses	RMB												
3	truck 4 t	day												
4	truck 6 t	day	225.450	21.590	21.590	4,867.466	3.000	54.000	12,174.300				75.590	17,041.766
5	other small equipment cost	RMB												
6	basic price	RMB	1.000	6,793.000	6,793.000	6,793.000	944.000	16,992.000	16,992.000					23,785.000
7	direct cost	RMB				4,867.466			12,174.300					17,041.766
8	other direct cost	%		11.860		805.650	11.860		2,015.251					2,820.901
9	site expense	%		8.730		593.029	8.730		1,483.402					2,076.431
10	indirect cost	%		3.650		298.996	3.650		747.909					1,046.905
direct construction cost + indirect cost		RMB				6,565.141			16,420.862					22,986.003
item of direct construction cost		RMB		labor cost		material cost		equipment cost 17,041.000		direct construction cost 21,939.000				

Table F-6-3

Transportation of demolished concrete waste (load , carry ,and unload)

item	construction work			transportation of demolished concrete waste									Total	
	content of work			transport distance(1km)			transport distance (0.5km add. every time)							
	unit of work			1,000.000 m3			1,000.000 m3							
	quantity of work			1.000 *1000m3			18.000 *0.5km							
	reference			method of estimation of road project in China 1-6-3			method of estimation of road project in China 1-6-4							
	work item	unit	price (RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	quantity	cost(RMB)
1	worker	man-day												
2	other material expenses	RMB												
3	truck 4 t	nos·day												
4	truck 6 t	nos·day	225.450	34.250	34.250	7,721.663	4.660	83.880	18,910.746				118.130	26,632.409
5	other small equipment cost	RMB												
6	basic price	RMB	1.000	10,776.000	10,776.000	10,776.000	1,466.000	26,388.000	26,388.000					37,164.000
7	direct cost	RMB				7,721.663			18,910.746					26,632.409
8	other direct cost	%		11.180		1,204.757	11.180		2,950.178					4,154.935
9	site expense	%		11.530		1,242.473	11.530		3,042.536					4,285.009
10	indirect cost	%		3.820		505.127	3.820		1,236.943					1,742.070
direct construction cost + indirect cost		RMB				10,674.020			26,140.403					36,814.423
item of direct construction cost		RMB		labor cost		material cost		equipment cost 26,632.000		direct construction cost 35,072.000				

Table F-6-4

Leveling gravel

item	construction work			leveling gravel									Total	
	content of work			t=10cm										
	unit of work			100.000 m2										
	quantity of work			1.000 *100m2										
	reference			method of estimation of construction in Japan(p369)										
	work item	unit	price (RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	0.100	0.100	1.800							0.100	1.800
2	coarse aggregate	m3	50.050	12.800	12.800	640.640							12.800	640.640
3	other material expenses	RMB												
4	motor grader	nos・day	436.890	0.100	0.100	43.689							0.100	43.689
5	macadam road roller 8t	nos・day	208.570	0.100	0.100	20.857							0.100	20.857
6	tire roller	nos・day	263.580	0.100	0.100	26.358							0.100	26.358
7	road sprinkler	nos・day	263.070	0.100	0.100	26.307							0.100	26.307
8	other small equipment cost	RMB												
9	basic price	RMB												
10	direct cost	RMB				759.651								759.651
11	other direct cost	%		18.220		138.408								138.408
12	site expense	%		16.660		126.558								126.558
13	indirect cost	%		4.320		44.263								44.263
direct construction cost + indirect cost		RMB				1,068.880								1,068.880
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				1.000		640.000		117.000		1,024.000				

Table F-6-5

Sprinkling water

item	construction work			water									Total	
	content of work			road sprinkler 4000l,1km										
	unit of work			100.000 m3water										
	quantity of work			1.000 * 100m3w										
	reference			method of estimation of road project in China 1-15-1										
	work item	unit	price-price	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000											
2	water	m 3	0.450	100.000	100.000	45.000							100.000	45.000
3	other material expenses	RMB												
4	road sprinkler 4000l	nos *day	263.070	2.750	2.750	723.443							2.750	723.443
5	other small equipment cost	RMB												
6	basic price	RMB	1.000	973.000	973.000	973.000								973.000
7	direct cost	RMB				768.443								768.443
8	other direct cost	%		11.860		115.398								115.398
9	site expense	%		8.730		84.943								84.943
10	indirect cost	%		3.650		42.827								42.827
direct construction cost + indirect cost		RMB				1,011.611								1,011.611
item of direct construction cost		RMB		labor cost		material cost 45.000		equipment cost 723.000		direct construction cost 968.000				

Table F-6-6

Backfilling

item	construction work			backfilling									Total	
	content of work			common soil typed										
	unit of work			100.000 m3										
	quantity of work			1.000 *100m3										
	reference			method of estimation of construction in Japan(p24)										
	work item	unit	price (RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	7.000	7.000	126.000							7.000	126.000
2	borrowed soil	m3	5.000	110.000	110.000	550.000							110.000	550.000
3	other material expenses	RMB												
4	back hoe	nos・day	457.430	1.000	1.000	457.430							1.000	457.430
5	tamping machine	nos・day	88.700	3.000	3.000	266.100							3.000	266.100
6	other small equipment cost	RMB												
7	basic price	RMB												
8	direct cost	RMB				1,399.530								1,399.530
9	other direct cost	%		18.220		254.994								254.994
10	site expense	%		16.660		233.162								233.162
11	indirect cost	%		4.320		81.548								81.548
direct construction cost + indirect cost		RMB				1,969.234								1,969.234
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				126.000		550.000		723.000		1,887.000				

Table F-6-7

Planting

item	construction work			planting									Total	
	content of work			grass			plant							
	unit of work			100.000 m2			100.000 m2							
	quantity of work			1.000 *100m2			1.000 *100m2							
	reference			method of estimation of road project in China 1-21-1			method of estimation of road project in China 1-21-1							
	work item	unit	price (RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	5.000	5.000	90.000	20.000	20.000	360.000				25.000	450.000
2	grass	㎡	1.800	110.000	110.000	198.000							110.000	198.000
3	plant	each	30.000				50.000	50.000	1,500.000				50.000	1,500.000
4	water	m3	0.450	50.000	50.000	22.500	50.000	50.000	22.500				100.000	45.000
5	other material expenses	RMB	1.000	25.800	25.800	25.800	38.700	38.700	38.700				64.500	64.500
6	other small equipment cost	RMB												
7	basic price	RMB	1.000	304.000	304.000	304.000	456.000	456.000	456.000					760.000
8	direct cost	RMB				336.300			1,921.200					2,257.500
9	other direct cost	%		18.220		55.389	18.220		83.083					138.472
10	site expense	%		16.660		50.646	16.660		75.970					126.616
11	indirect cost	%		4.320		17.714	4.320		26.570					44.284
direct construction cost + indirect cost		RMB				460.049			2,106.823					2,566.872
item of direct construction cost		RMB		labor cost 450.000		material cost 1,807.000		equipment cost		direct construction cost 2,522.000				

Price of plant is based on that in Japan. ￥400*0.07=30RMB a plant

Table F-6-8

Transplanting

item	construction work			transplanting									Total	
	content of work			h=3.0, d=20cm plantation			h=3.0, d=20cm excavation							
	unit of work			100.000 trees			100.000 trees							
	quantity of work			1.000 *100trees			1.000 *100trees							
	reference			method of estimation of construction in Japan(p707)			method of estimation of construction in Japan(p707)							
	work item	unit	price-price	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	unit of work	quantity of work	sub. total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	100.000	100.000	1,800.000	100.000	100.000	1,800.000				200.000	3,600.000
2	other material expenses	RMB												
3	back hoe	nos･day	457.430	4.800	4.800	2,195.664	9.000	9.000	4,116.870				13.800	6,312.534
4	truck crane	nos･day	513.420	7.000	7.000	3,593.940	1.600	1.600	821.472				8.600	4,415.412
5	other small equipment cost	RMB												
6	basic price	RMB												
7	direct cost	RMB				7,589.604			6,738.342					14,327.946
8	other direct cost	%		18.220		1,382.826	18.220		1,227.726					2,610.552
9	site expense	%		16.660		1,264.428	16.660		1,122.608					2,387.036
10	indirect cost	%		4.320		442.232	4.320		392.631					834.863
direct construction cost + indirect cost		RMB				10,679.090			9,481.307					20,160.397
item of direct construction cost		RMB		labor cost 3,600.000		material cost		equipment cost 10,727.000		direct construction cost 19,325.000				

Table F-6-9

Demolition of existing carriageway

item	construction work			Demolishment of existing carriageway			transportation of concrete waste			sprinkling water			Total	
	content of work			(concrete pavement and base course)			transport distance 10km			road sprinkler 4000l,1km				
	unit of work			1,000.000 m2			concrete pavement area 1000 m2			concrete pavement area 1000 m2				
	quantity of work			1.000 ＊1000m2			0.450 ＊1000m3			0.300 ＊1000m3				
	reference			method of estimation of road project in China 2-3-1,2			tableF-3-3			tableF-3-5				
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	91.700	91.700	1,650.600							91.700	1,650.600
2	water	m3	0.450								300.000	135.000	300.000	135.000
3	other material expenses	RMB	1.000											
4	bulldozer	nos･day	834.050											
5	vibrating roller	nos･day	464.190	0.230	0.230	106.764							0.230	106.764
6	concrete cutter	nos･day	42.940	3.500	3.500	150.290							3.500	150.290
7	truck 6 t	nos･day	225.450					53.159	11,984.584				53.159	11,984.584
8	road sprinkler4000l	nos･day	263.070								8.250	2,170.329	8.250	2,170.329
9	other small equipment cost	RMB												
10	basic price	RMB	1.000	1,413.000	1,413.000	1,413.000		16,723.800	16,723.800		2,919.000	2,919.000		21,055.800
11	direct cost	RMB				1,907.654			11,984.584			2,305.329		16,197.567
12	other direct cost	%		18.220		257.449			1,869.721			346.194		2,473.364
13	site expense	%		16.660		235.406			1,928.254			254.829		2,418.489
14	indirect cost	%		4.320		82.333			783.932			128.481		994.746
direct construction cost + indirect cost		RMB				2,482.842			16,566.490			3,034.833		22,084.165
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				1,650.000		135.000		14,411.000		21,089.000				

Standard section of existing carriageway (21cm of concrete pavement and 24cm of base course)

The amount of waste concrete 1000*0.21=210m3 the amount of water=3001/1000m2

The amount of waste material from base course 1000*0.24=240m3

Table F-6-10

Demolition of existing bicycle lane

item	construction work			Demolition of removal of motor vehicle lines			transportation of concrete waste			sprinkling water			Total	
	content of work			(concrete pavement and base course)			transport distance 10km			road sprinkler 4000l,1km				
	unit of work			1,000.000 m2			concrete pavement area 1000 m2			concrete pavement area 1000 m2				
	quantity of work			1.000 *1000m2			0.350 *1000m3			3.000*100m3 water				
	reference			method of estimation of road project in China 2-3-1,2			tableF-3-3			tableF-3-5				
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	91.200	91.200	1,641.600							91.200	1,641.600
2	water	m3	0.450								300.000	135.000	300.000	135.000
3	other material expenses	RMB												
4	bulldozer	nos·day	834.050											
5	vibrating roller	nos·day	464.190	0.230	0.230	106.764							0.230	106.764
6	concrete cutter	nos·day	42.940	3.000	3.000	128.820							3.000	128.820
7	truck 6 t	nos·day	225.450					41.346	9,321.343				41.346	9,321.343
8	road sprinkler4000l	nos·day	263.070								8.250	2,170.329	8.250	2,170.329
9	other small equipment cost	RMB												
10	basic price	RMB	1.000	1,413.000	1,413.000	1,413.000		13,007.400	13,007.400		973.000	2,919.000		17,339.400
11	direct cost	RMB				1,877.184			9,321.343			2,305.329		13,503.856
12	other direct cost	%		18.220		257.449			1,454.227			346.194		2,057.870
13	site expense	%		16.660		235.406			1,499.753			254.829		1,989.988
14	indirect cost	%		4.320		82.333			609.725			128.481		820.539
direct construction cost + indirect cost		RMB				2,452.372			12,885.048			3,034.833		18,372.253
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				1,641.000		135.000		11,727.000		17,551.000				

Standard section of existing carriageway (15cm of concrete pavement and 20cm of base course)

The amount of waste concrete 1000*0.15=150m3 the amount of water=3001/1000m2

The amount of waste material from base course 1000*0.2=200m3

Table F-6-11

Demolition of existing pedestrian

item	construction work			Demolition of existing pedestrian			transportation of waste material			sprinkling water			Total	
	content of work			(including curb)			transport distance 10km			road sprinkler 4000l,1km				
	unit of work			1,000.000 m2			area 1000 m2			area 1000 m2				
	quantity of work			1.000 ＊1000m2			0.350 ＊1000m3			2.000*100m3 water				
	reference			method of estimation of road project in China 2-3-1,2			tableF-3-2			tableF-3-5				
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	106.000	106.000	1,908.000							106.000	1,908.000
2	water	m3	0.450								200.000	90.000	200.000	90.000
3	other material expenses	RMB												
4	bulldozer	nos･day	834.050											
5	vibrating roller	nos･day	464.190	0.230	0.230	106.764							0.230	106.764
6	truck 6 t	nos･day	225.450					26.457	5,964.618				26.457	5,964.618
7	road sprinkler4000l	nos･day	263.070								5.500	1,446.885	5.500	1,446.885
8	other small equipment cost	RMB												
9	basic price	RMB	1.000	1,413.000	1,413.000	1,413.000		8,324.750	8,324.750		1,946.000	1,946.000		11,683.750
10	direct cost	RMB				2,014.764			5,964.618			1,536.885		9,516.267
11	other direct cost	%		18.220		257.449			987.315			230.796		1,475.560
12	site expense	%		16.660		235.406			726.751			169.886		1,132.043
13	indirect cost	%		4.320		82.333			366.417			85.654		534.404
direct construction cost + indirect cost		RMB				2,589.952			8,045.101			2,023.221		12,658.274
item of direct construction cost		RMB		labor cost 1,908.000		material cost 90.000		equipment cost 7,518.000		direct construction cost 12,123.000				

standard section of pedestrian

amount of waste materials=1000*0.35=350m3

The costs involved in additional cost for removing guardrail etc 20% of man-day costs. ･(88.2*1.20=106)

amount of water＝200l/1000m2

Table F-6-12

Demolition of existing divider (W=2m)

item	construction work			Demolition of existing divider (W=2m)			transportation of waste material			sprinkling water			Total	
	content of work			(including guardrail, trees)			transport distance 10km			road sprinkler 4000l,1km				
	unit of work			1,000.000 m2			area 1000 m2			area 1000 m2				
	quantity of work			1.000 ＊1000m2			0.300 ＊1000m3			2.000*100m3 water				
	reference			method of estimation of road project in China 2-3-1,2			tableF-3-2			tableF-3-5				
	work item	unit	unit-price(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	105.000	105.000	1,890.000							105.000	1,890.000
2	water	m3	0.450								200.000	90.000	200.000	90.000
3	other material expenses	RMB												
4	bulldozer	nos･day	271.350											
5	vibrating roller	nos･day	464.190	0.230	0.230	106.764							0.230	106.764
6	truck 6 t	nos･day	225.450					35.439	7,989.723				35.439	7,989.723
7	road sprinkler4000l	nos･day	263.070								5.500	1,446.885	5.500	1,446.885
8	other small equipment cost	RMB												
9	basic price	RMB	1.000	1,413.000	1,413.000	1,413.000		11,149.200	11,149.200		1,946.000	1,946.000		14,508.200
10	direct cost	RMB				1,996.764			7,989.723			1,536.885		11,523.372
11	other direct cost	%		18.220		257.449			1,246.481			230.796		1,734.726
12	site expense	%		16.660		235.406			1,285.503			169.886		1,690.795
13	indirect cost	%		4.320		82.333			522.621			85.654		690.608
direct construction cost + indirect cost		RMB				2,571.952			11,044.327			2,023.221		15,639.500
item		RMB		labor cost		material cost		equipment cost		direct construction cost				
				1,890.000		90.000		9,543.000		14,948.000				
												(1000m2/2m=500m)		31.000

wastematerials=1000*0.30=300m3 amount of water＝200l/1000m2

The costs involved in additional cost for removing guardrail etc 20% of man-day costs.

Table F-6-13

Base course (cement stabilize)

item	construction work			Base course (cement stabilize)									Total	
	content of work			cement stabilize(less than t= 15cm)										
	unit of work			1,000.000 m2										
	quantity of work			1.000 *1000m2										
	reference			method of estimation of road project in China 2-6-7										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	30.300	30.300	545.400							30.300	545.400
2	cement	t	453.300	32.000	32.000	14,505.600							32.000	14,505.600
3	coarse aggregate	m3	50.050	210.510	210.510	10,536.026							210.510	10,536.026
4	soil	m3												
5	fine aggregate	m3												
6	other material expenses	RMB												
7	motor grader 90kw	nos·day	436.890	0.490	0.490	214.076							0.490	214.076
8	macadam road roller 8 t	nos·day	208.570	0.380	0.380	79.257							0.380	79.257
9	macadam road roller 15 t	nos·day	297.140	1.580	1.580	469.481							1.580	469.481
10	mixer	nos·day	70.040	0.340	0.340	23.814							0.340	23.814
11	road sprinkler4000l	nos·day	263.070	1.000	1.000	263.070							1.000	263.070
12	other small equipment cost	RMB												
13	basic price	RMB	1.000	13,697.000	13,697.000	13,697.000								13,697.000
14	direct cost	RMB				26,636.724								26,636.724
15	other direct cost	%		18.220		2,495.593								2,495.593
16	site expense	%		16.660		2,281.920								2,281.920
17	indirect cost	%		4.320		798.099								798.099
direct construction cost + indirect cost		RMB				32,212.336								32,212.336
item of direct construction cost		RMB		labor cost 545.000		material cost 25,041.000		equipment cost 1,049.000		direct construction cost 31,414.000				

Table F-6-14

Base course (asphalt stabilize)

item	construction work			Base course (asphalt stabilize)									Total	
	content of work			asphalt stabilize(less than t= 15cm)										
	unit of work			1,000.000 m2										
	quantity of work			1.000 *1000m2										
	reference			method of estimation of road project in China 2-6-7										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	30.300	30.300	545.400							30.300	545.400
2	asphalt	t	1,899.500	4.000	4.000	7,598.000							4.000	7,598.000
3	coarse aggregate	m3	50.050	210.510	210.510	10,536.026							210.510	10,536.026
4	soil	m3												
5	fine aggregate	m3												
6	other material expenses	RMB												
7	motor grader 90kw	nos·day	436.890	0.490	0.490	214.076							0.490	214.076
8	macadam road roller 8 t	nos·day	208.570	0.380	0.380	79.257							0.380	79.257
9	macadam road roller 15 t	nos·day	297.140	1.580	1.580	469.481							1.580	469.481
10	mixer	nos·day	70.040	0.340	0.340	23.814							0.340	23.814
11	road sprinkler4000l	nos·day	263.070	1.000	1.000	263.070							1.000	263.070
12	other small equipment cost	RMB												
13	basic price	RMB	1.000	13,697.000	13,697.000	13,697.000								13,697.000
14	direct cost	RMB				19,729.124								19,729.124
15	other direct cost	%		18.220		2,495.593								2,495.593
16	site expense	%		16.660		2,281.920								2,281.920
17	indirect cost	%		4.320		798.099								798.099
direct construction cost + indirect		RMB				25,304.736								25,304.736
item of direct construction cost		RMB		labor cost 545.000		material cost 1,834.000		equipment cost 1,049.000		direct construction cost 24,506.000				

asphalt＝4l/m2

Table F-6-15

Base course (lime stabilize)

item	construction work			Base course (lime stabilize)									Total	
	content of work			lime stabilize(less than t= 15cm)										
	unit of work			1,000.000 m2										
	quantity of work			1.000 *1000m2										
	reference			method of estimation of road project in China 2-7-5										
	work item	unit	unit-price(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	38.300	38.300	689.400							38.300	689.400
2	lime	t	134.550	32.000	32.000	4,305.600							32.000	4,305.600
3	coarse aggregate	m3	50.050	205.490	205.490	10,284.775							205.490	10,284.775
4	soil	m3												
5	fine aggregate	m3												
6	other material expenses	RMB												
7	motor grader 90kw	nos·day	436.890	0.490	0.490	214.076							0.490	214.076
8	macadam road roller 8 t	nos·day	208.570	0.380	0.380	79.257							0.380	79.257
9	macadam road roller 15 t	nos·day	297.140	1.580	1.580	469.481							1.580	469.481
10	mixer	nos·day	70.040	0.340	0.340	23.814							0.340	23.814
11	road sprinkler4000l	nos·day	263.070	1.270	1.270	334.099							1.270	334.099
12	other small equipment cost	RMB												
13	basic price	RMB	1.000	9,277.000	9,277.000	9,277.000								9,277.000
14	direct cost	RMB				16,400.502								16,400.502
15	other direct cost	%		18.220		1,690.269								1,690.269
16	site expense	%		16.660		1,545.548								1,545.548
17	indirect cost	%		4.320		540.554								540.554
direct construction cost + indirect cost		RMB				20,176.873								20,176.873
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				689.000		14,590.000		1,120.000		19,636.000				

Table F-6-16

curb

item	construction work			curb									Total	
	content of work			concrete										
	unit of work			10.000 m3										
	quantity of work			1.000 *10m3										
	reference			method of estimation of road project in China 2-27-4										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	82.300	82.300	1,481.400							82.300	1,481.400
2	processed timber	m3	1,255.500	0.080	0.080	100.440							0.080	100.440
3	nails	kg	5.200	2.800	2.800	14.560							2.800	14.560
4	cement	t	453.300	3.283	3.283	1,488.184							3.283	1,488.184
5	water	m3	0.450	17.000	17.000	7.650							17.000	7.650
6	lime	t	134.550	0.159	0.159	21.393							0.159	21.393
7	fine aggregate	m3	47.310	6.170	6.170	291.903							6.170	291.903
8	coarse aggregate	m3	50.050	8.790	8.790	439.940							8.790	439.940
9	other material expenses	RMB	1.000	27.000	27.000	27.000							27.000	27.000
10	concrete mixer	nos·day	70.040	0.710	0.710	49.728							0.710	49.728
11	other small equipment cost	RMB	1.000	7.700	7.700	7.700							7.700	7.700
12	basic price	RMB	1.000	3,092.000	3,092.000	3,092.000								3,092.000
13	direct cost	RMB				3,929.898								3,929.898
14	other direct cost	%		5.630		174.080								174.080
15	site expense	%		6.870		212.420								212.420
16	indirect cost	%		2.540		88.354								88.354
direct construction cost + indirect cost		RMB				4,404.752								4,404.752
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				1,481.000		2,391.000		57.000		4,316.000				

standard size of curb (0.15*0.35*1m) the amount of concrete 10m3/(0.15*0.35m2)=190m total of direct construction costs and indirect costs=4405RMB/190m=23RMB/m

Table F-6-17

asphalt pavement(color pavement t=3cm)

item	construction work			asphalt pavement(color pavement t=3cm)									Total	
	content of work			fine aggr.(concrete plant 30t/h)			truck transportation (distance 1km)			transport distance (add.every 1km)				
	unit of work			100.000 m3			100.000 m3			100.000 m3				
	quantity of work			1.000 *100m3			1.000 *100m3			9.000 *100m3				
	reference			method of estimation of road project in China 2-23-12			method of estimation of road project in China 2-23-42			method of estimation of road project in China 2-23-46				
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	38.200	38.200	687.600							38.200	687.600
2	asphalt	t	1,899.500	14.040	14.040	26,668.980							14.040	26,668.980
3	fine aggregate	m3	47.310	25.760	25.760	1,218.706							25.760	1,218.706
4	steel dust	t	95.000	9.430	9.430	895.850							9.430	895.850
5	stone dust	m3	31.500	15.570	15.570	490.455							15.570	490.455
6	coarse aggregate	m3	50.050	109.020	109.020	5,456.451							109.020	5,456.451
7	paints (for color pavement)	t	25,000.000	5.300	5.300	132,500.000							5.300	132,500.000
8	other material expenses	RMB	1.000	16.100	16.100	16.100							16.100	16.100
9	shovel 1m3	nos･day	337.630	2.150	2.150	725.905							2.150	725.905
10	macadam road roller 8 t	nos･day	208.570	2.320	2.320	483.882							2.320	483.882
11	macadam road roller 15 t	nos･day	297.140	2.320	2.320	689.365							2.320	689.365
12	asphalt plant 30t/h	nos･day	2,318.710	2.270	2.270	5,263.472							2.270	5,263.472
13	asphalt finisher	nos･day	1,145.050	2.320	2.320	2,656.516							2.320	2,656.516
14	tire roller	nos･day	263.580	2.320	2.320	611.506							2.320	611.506
15	boiler	nos･day	436.150	2.360	2.360	1,029.314							2.360	1,029.314
16	truck 6t	nos･day	225.450				2.120	2.120	477.954	0.370	3.330	750.749	5.450	1,228.703
17	other small equipment cost	RMB												
18	basic price	RMB	1.000	34,708.000	34,708.000	34,708.000	872.000	872.000	872.000	152.000	1,368.000	1,368.000		36,948.000
19	direct cost	RMB				179,394.102			477.954			750.749		180,622.805
20	other direct cost	%		5.630		1,954.060	5.630		49.094	5.630		77.018		2,080.172
21	site expense	%		6.870		2,384.440	6.870		59.906	6.870		93.982		2,538.328
22	indirect cost	%		2.540		991.781	2.540		24.917	2.540		39.091		1,055.789
direct construction cost + indirect cost		RMB				184,724.383			611.871			960.840		186,297.094
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				687.000		167,246.000		12,688.000		185,241.000				
												per m2（RMB/100m3*0.03m)		56.000

The price of paints is based on that in Japan.（￥350/kg*0.07=25yuan/kg,The amount of paints is 1.6kg/m2/0.03m=53kg/m3)

Table F-6-18

asphalt pavement(permeable t=3cm)

item	construction work			asphalt pavement(penetrable pavement t=3cm)									Total	
	content of work			coarse aggr.(concrete plant 30t/h)			truck transportation (distance 1km)			transport distance (add.every 1km)				
	unit of work			100.000 m3			100.000 m3			100.000 m3				
	quantity of work			1.000 *100m3			1.000 *100m3			9.000 *100m3				
	reference			method of estimation of road project in China 2-23-12			method of estimation of road project in China 2-23-42			method of estimation of road project in China 2-23-46				
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	33.600	33.600	604.800							33.600	604.800
2	asphalt	t	1,899.500	11.725	11.725	22,271.638							11.725	22,271.638
3	fine aggregate	m3	47.310	18.070	18.070	854.892							18.070	854.892
4	steel dust	t	95.000	4.820	4.820	457.900							4.820	457.900
5	stone dust	m3	31.500	34.940	34.940	1,100.610							34.940	1,100.610
6	coarse aggregate	m3	50.050	103.240	103.240	5,167.162							103.240	5,167.162
7	add.(permeable pavement)	t	25,000.000	4.500	4.500	112,500.000							4.500	112,500.000
8	other material expenses	RMB	1.000	8.100	8.100	8.100							8.100	8.100
9	shovel 1m3	nos·day	337.630	2.170	2.170	732.657							2.170	732.657
10	macadam road roller 8 t	nos·day	208.570	2.320	2.320	483.882							2.320	483.882
11	macadam road roller 15 t	nos·day	297.140	2.320	2.320	689.365							2.320	689.365
12	asphalt plant 30t/h	nos·day	2,318.710	2.270	2.270	5,263.472							2.270	5,263.472
13	asphalt finisher	nos·day	1,145.050	2.320	2.320	2,656.516							2.320	2,656.516
14	tire roller	nos·day	263.580	2.320	2.320	611.506							2.320	611.506
15	boiler	nos·day	436.150	2.380	2.380	1,038.037							2.380	1,038.037
16	truck 6t	nos·day	225.450				2.120	2.120	477.954	0.370	3.330	750.749	5.450	1,228.703
17	other small equipment cost	RMB												
18	basic price	RMB	1.000	31,210.000	31,210.000	31,210.000	872.000	872.000	872.000	152.000	1,368.000	1,368.000		33,450.000
19	direct cost	RMB				154,440.537			477.954			750.749		155,669.240
20	other direct cost	%		5.630		1,757.123	5.630		49.094	5.630		77.018		1,883.235
21	site expense	%		6.870		2,144.127	6.870		59.906	6.870		93.982		2,298.015
22	indirect cost	%		2.540		891.826	2.540		24.917	2.540		39.091		955.834
direct construction cost + indirect		RMB				159,233.613			611.871			960.840		160,806.324
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				604.000		142,360.000		12,704.000		159,850.000				

The price of add. is based on that in Japan.（￥360/kg*0.07=25RMB/kg,The amount of add is 1.4kg/m2/0.03m=45kg/m3.)

Table F-6-19

pedestrian(color pavement t=3cm)

item	construction work			asphalt pavement			base course						Total	
	content of work			color asphalt t=3cm			asphalt stabilize			lime stabilize				
	unit of work			1000 m2			1000 m2			1000 m2				
	quantity of work			0.3 *1000m2			1 *1000m2			1 *1000m2				
	reference			table f-3-18			table f-3-14			table f-3-15				
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000		10.080	181.440		30.300	545.400		38.300	689.400	78.680	1,416.240
2	asphalt	t	1,899.500		3.518	6,681.491		214.510	18,134.026		237.490	14,590.375	455.518	39,405.892
3	fine aggregate	m3	47.310		5.421	256.468							5.421	256.468
4	steel dust	t	95.000		1.446	137.370							1.446	137.370
5	stone dust	m3	31.500		10.482	330.183							10.482	330.183
6	coarse aggregate	m3	50.050		30.972	1,550.149							30.972	1,550.149
7	add.(permeable pavement)	t	25,000.000		1.350	33,750.000							1.350	33,750.000
8	other material expenses	RMB	1.000		2.430	2.430							2.430	2.430
9	shovel 1m3	nos･day	337.630		0.651	219.797		3.790	1,049.698		4.060	1,120.727	8.501	2,390.222
10	macadam road roller 8 t	nos･day	208.570		0.696	145.165							0.696	145.165
11	macadam road roller 15 t	nos･day	297.140		0.696	206.810							0.696	206.810
12	asphalt plant 30t/h	nos･day	2,318.710		0.681	1,579.042							0.681	1,579.042
13	asphalt finisher	nos･day	1,145.050		0.696	796.955							0.696	796.955
14	tire roller	nos･day	263.580		0.696	183.452							0.696	183.452
15	boiler	nos･day	436.150		0.714	311.411							0.714	311.411
16	truck 6t	nos･day	225.450		1.635	368.611							1.635	368.611
17	other small equipment cost	RMB												
18	basic price	RMB	1.000		10,035.000	10,035.000								10,035.000
19	direct cost	RMB				46,700.772			19,729.124			16,400.502		82,830.398
20	other direct cost	%				564.971			2,495.593			1,690.269		4,750.833
21	site expense	%				689.405			2,281.920			1,545.548		4,516.873
22	indirect cost	%				286.750			798.099			540.554		1,625.403
direct construction cost + indirect		RMB				48,241.897			25,304.736			20,176.873		93,723.506
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				1,416.000		75,432.000		5,981.000		92,098.000				

The price of additive is based on that in Japan.（￥360/kg*0.07=25RMB/kg,The amount of additive is 1.4kg/m2/0.03m=45kg/m3.)

Table F-6-20

concrete pavement(t=21cm)

item	construction work			concrete pavement(t=21cm)									Total	
	content of work			(t=21cm、transport distance 1km.)			reinforcement arrange work (20kg/m2)			(t=21cm、transport distance 9km.)				
	unit of work			1,000.000 m2			20.000 t			1,000.000 m2				
	quantity of work			1.000 *1000m2			20.000 t			1.000 *1000m2				
	reference			method of estimation of road project in China 2-26-3,4			method of estimation of road project in China 2-26-7			method of estimation of road project in China 2-26-2				
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	266.700	266.700	4,800.600	8.200	164.000	2,952.000				430.700	7,752.600
2	processed timber	m3	1,255.500	0.140	0.140	175.770							0.140	175.770
3	reinforcing bar-Ⅰ	t	2,378.000	0.004	0.004	9.512	0.359	7.180	17,074.040				7.184	17,083.552
4	reinforcing bar-Ⅱ	t	2,460.000				0.666	13.320	32,767.200				13.320	32,767.200
5	steel	t	3,000.000	0.047	0.047	141.000							0.047	141.000
6	reinforcing mesh	kg	6.500				5.100	102.000	663.000				102.000	663.000
7	cement	t	453.300	86.965	86.965	39,421.235							86.965	39,421.235
8	asphalt	t	1,899.500	0.110	0.110	208.945							0.110	208.945
9	soot	t	200.000	0.024	0.024	4.800							0.024	4.800
10	water	m3	0.450	252.000	252.000	113.400							252.000	113.400
11	fine aggregate	m3	47.310	102.820	102.820	4,864.414							102.820	4,864.414
12	coarse aggregate	m3	50.050	177.790	177.790	8,898.390							177.790	8,898.390
13	other material expenses	RMB	1.000	90.400	90.400	90.400							90.400	90.400
14	bulldozer	nos·day	271.350	2.140	2.140	580.689							2.140	580.689
15	concrete pump	nos·day	105.080	3.650	3.650	383.542							3.650	383.542
16	concrete cutting machine	nos·day	42.940	3.630	3.630	155.872							3.630	155.872
17	concrete mixer	nos·day	70.040											
18	agitating truck	nos·day	957.680	6.670	6.670	6,387.726				8.010	8.010	7,671.017	14.680	14,058.743
19	concrete plant	nos·day	2,318.710	2.690	2.690	6,237.330							2.690	6,237.330
20	other small equipment cost	RMB	1.000	57.000	57.000	57.000	5.300	106.000	106.000				163.000	163.000
21	basic price	RMB	1.000	50,333.000	50,333.000	50,333.000	3,037.000	60,740.000	60,740.000	4,815.000	4,815.000	4,815.000		115,888.000
22	direct cost	RMB				72,530.625			53,562.240			7,671.017		133,763.882
23	other direct cost	%		5.630		2,833.748	5.630		3,419.000	5.630		271.000		6,523.748
24	site expense	%		6.870		3,457.877	6.870		4,172.000	6.870		330.000		7,959.877
25	indirect cost	%		2.540		1,438.265	2.540		1,735.000	2.540		137.000		3,310.265
direct construction cost + indirect cost		RMB				80,260.515			62,888.240			8,409.017		151,557.772
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				7,752.000		104,432.000		21,579.000		148,247.000				

Table F-6-31

road sign(trunk busway,single column type)

item	construction work			common road signs									Total	
	content of work			single-column aluminum										
	unit of work			10.000										
	quantity of work			1.000 ×10										
	reference			method of estimation of road project in China 4-6-5										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	70.000	70.000	1,260.000							70.000	1,260.000
2	processed timber	m3	1,255.500	0.006	0.006	7.533							0.006	7.533
3	reinforcing bar- I	t	2,378.000	0.220	0.220	523.160							0.220	523.160
4	steel	t	3,000.000	0.020	0.020	60.000							0.020	60.000
5	section steel	t	5,000.000	0.045	0.045	225.000							0.045	225.000
6	reinforcing mesh	kg	6.500	22.200	22.200	144.300							22.200	144.300
7	steel signs	t	7,000.000											
8	aluminum signs	t	8,750.000	1.190	1.190	10,412.500							1.190	10,412.500
9	cement	t	453.300	4.479	4.479	2,030.331							4.479	2,030.331
10	water	m3	0.450	15.000	15.000	6.750							15.000	6.750
11	fine aggregate	m3	47.310	6.530	6.530	308.934							6.530	308.934
12	coarse aggregate	m3	50.050	11.350	11.350	568.068							11.350	568.068
13	other material expenses	RMB	1.000	132.900	132.900	132.900							132.900	132.900
14	truck of 6t	nos·day	225.450	1.100	1.100	247.995							1.100	247.995
15	truck crane	nos·day	513.420	1.100	1.100	564.762							1.100	564.762
16	other small equipment cost	RMB	1.000	5.400	5.400	5.400							5.400	5.400
17	basic price	RMB	1.000	15,318.000	15,318.000	15,318.000								15,318.000
18	direct cost	RMB				16,497.633								16,497.633
19	other direct cost	%		18.220		2,790.940								2,790.940
20	site expense	%		16.660		2,551.979								2,551.979
21	indirect cost	%		4.320		892.552								892.552
direct construction cost + indirect cost		RMB				22,733.104								22,733.104
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				1,260.000		14,419.000		818.000		21,840.000				

note: The prices of 7 and 8 are board and column.

Table F-6-32

road marking and chatter bar for truck busway

item	construction work			road marking			chatter bar						Total	
	content of work			width of line＝0.5m			concrete							
	unit of work			100.000 m2			1.000 10m3							
	quantity of work			1.000 ＊100m2			1.000 *10m3							
	reference			method of estimation of road project in Chaina6-7-1,2										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	5.300	5.300	95.400			149.220				5.300	244.620
2	paints	l	42.000	110.000	110.000	4,620.000							110.000	4,620.000
3	steel peg	each	12.000				800.000	800.000	9,600.000				800.000	9,600.000
4	other material costs	RMB							1,801.751					1,801.751
5	other small equipment cost	RMB	1.000	110.000	110.000	110.000			345.448				110.000	455.448
6	basic price	RMB	1.000	1,031.000	1,031.000	1,031.000								1,031.000
7	direct cost	RMB				4,825.400			11,896.419					16,721.819
8	other direct cost	%		5.630		271.670	18.220		2,167.528					2,439.198
9	site expense	%		6.870		331.505	16.660		1,981.943					2,313.448
10	indirect cost	%		2.540		137.886	4.320		693.182					831.068
direct construction cost + indirect cost		RMB				5,566.461			16,739.072					22,305.533
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				244.000		16,021.000		455.000		21,474.000				
												per meter（100m2/0.5m =200m)		111.000

Price of paints is based on that in Japan. (￥600/1*0.07=42RMB/L) the amount of paint1 l/m2

Table F-6-33

road marking for carriage way

item	construction work			road marking for carriage way									Total	
	content of work			width of line＝0.5m										
	unit of work			100.000 m2										
	quantity of work			1.000 ＊100m2										
	reference			method of estimation of road project in Chaina6-7-1,2										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	5.300	5.300	95.400							5.300	95.400
2	paint	l	42.000	110.000	110.000	4,620.000							110.000	4,620.000
3	other material costs	RMB												
4	other small equipment cost	RMB	1.000	110.000	110.000	110.000							110.000	110.000
5	basic price	RMB	1.000	1,031.000	1,031.000	1,031.000								1,031.000
6	direct cost	RMB				4,825.400								4,825.400
7	other direct cost	%		5.630		271.670								271.670
8	site expense	%		6.870		331.505								331.505
9	indirect cost	%		2.540		137.886								137.886
direct construction cost + indirect cost		RMB				5,566.461								5,566.461
item		RMB		labor cost 95.000		material cost 4,620.000		equipment cost 110.000		direct construction cost 5,428.000				
													convert every meter（100m2/1.0m =100m)	55.000

Price of paints is based on that in Japan (￥600/1*0.07=42yuan/L) the amount of paint1 l/m2

Table F-6-34

guardrail

item	construction work			guardrail									Total	
	content of work			steel plate and pole										
	unit of work			100.000 m										
	quantity of work			1.000 ×100m										
	reference			method of estimation of road project in China 6-3-1										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	77.300	77.300	1,391.400							77.300	1,391.400
2	steel	t	3,000.000	2.167	2.167	6,501.000							2.167	6,501.000
3	steel mesh	kg	6.500	118.300	118.300	768.950							118.300	768.950
4	steel fence	m2	21.100	164.000	164.000	3,460.400							164.000	3,460.400
5	cement	t	453.300	2.229	2.229	1,010.406							2.229	1,010.406
6	water	m3	0.450	7.000	7.000	3.150							7.000	3.150
7	fine aggregate	m3	47.310	3.070	3.070	145.242							3.070	145.242
8	coarse aggregate	m3	50.050	5.380	5.380	269.269							5.380	269.269
9	other material costs	RMB	1.000	38.600	38.600	38.600							38.600	38.600
10	truck 6t	nos·day	225.450	2.260	2.260	509.517							2.260	509.517
11	generator	nos·day	316.140	19.240	19.240	6,082.534							19.240	6,082.534
12	other small equipment cost	RMB	1.000	89.300	89.300	89.300							89.300	89.300
13	basic price	RMB	1.000	14,474.000	14,474.000	14,474.000								14,474.000
14	direct cost	RMB				20,269.768								20,269.768
15	other direct cost	%		18.220		2,637.163								2,637.163
16	site expense	%		16.660		2,411.368								2,411.368
17	indirect cost	%		4.320		843.373								843.373
direct construction cost + indirect cost		RMB				26,161.672								26,161.672
item of direct construction cost		RMB		labor cost 1,391		material cost 12,197		equipment cost 6,681		direct construction cost 25,318				

Table F-6-35

divider(w= 2m,guardrail, planting)

item	construction work			divider(w= 2m,guardrail, planting)									Total	
	content of work			curb			planting			guardrail				
	unit of work			100.000 m			200.000 m2			100.000 m				
	quantity of work			1.000 ×100m			2.000 ×100m2			1.000 ×100m				
	reference			method of estimation of road project in China 6-4-1										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	254.800	254.800	4,586.400		50.000	900.000		77.300	1,391.400	382.100	6,877.800
2	grass	m2	1.800					220.000	396.000				220.000	396.000
3	plant	each	5.000					100.000	500.000				100.000	500.000
4	steel	t	3,000.000								2.167	6,501.000	2.167	6,501.000
5	steel fence	m2	21.100								164.000	3,460.400	164.000	3,460.400
6	process timber	m3	1,255.500	1.209	1.209	1,517.900							1.209	1,517.900
7	nails	kg	6.500	36.900	36.900	239.850					118.300	768.950	155.200	1,008.800
8	cement	t	453.300	5.711	5.711	2,588.796					2.229	1,010.406	7.940	3,599.202
9	water	m3	0.450	32.000	32.000	14.400					7.000	3.150	39.000	17.550
10	fine aggregate	m3	47.310	9.110	9.110	430.994					3.070	145.242	12.180	576.236
11	coarse aggregate	m3	50.050	13.650	13.650	683.183					5.380	269.269	19.030	952.452
12	other material costs	RMB	1.000	121.900	121.900	121.900		129.000	129.000		38.600	38.600	289.500	289.500
13	truck 6t	nos·day	225.450	1.130	1.130	254.759					2.260	509.517	3.390	764.276
14	concrete mixer	nos·day	70.040	4.540	4.540	317.982							4.540	317.982
15	generator	nos·day	316.140								19.240	6,082.534	19.240	6,082.534
16	other small equipment cost	RMB	1.000	26.400	26.400	26.400					89.300	89.300	115.700	115.700
17	basic price	RMB	1.000	9,698.000	9,698.000	9,698.000		1,520.000	1,520.000		14,474.000	14,474.000		25,692.000
18	direct cost	RMB				10,782.564			1,925.000			20,269.768		32,977.332
19	other direct cost	%		5.630		545.997	5.630		85.576	5.630		814.886		1,446.459
20	site expense	%		6.870		666.253	6.870		104.424	6.870		994.364		1,765.041
21	indirect cost	%		2.540		277.120	2.540		43.434	2.540		413.595		734.149
direct construction cost + indirect cost		RMB				12,271.934			2,158.434			22,492.613		36,922.981
item of direct construction cost		RMB		labor cost 6,877.000		material cost 18,819.000		equipment cost 7,280.000		direct construction cost 36,188.000				

Table F-6-36

bus stop (concrete roof, 2m wide and 20m long)

item	construction work			bus stop									Total	
	content of work			concrete roof										
	unit of work			1.000 each										
	quantity of work			1.000 each										
	reference			method of estimation of road project in China 6-10-2										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	220.600	220.600	3,970.800							220.600	3,970.800
2	timber	m3	1,064.800	2.029	2.029	2,160.479							2.029	2,160.479
3	processed timber	m3	1,255.500	0.605	0.605	759.578							0.605	759.578
4	reinforcing bar- Ⅰ	t	2,378.000	0.717	0.717	1,705.026							0.717	1,705.026
5	reinforcing bar- Ⅱ	t	2,460.000	0.612	0.612	1,505.520							0.612	1,505.520
6	steel	t	3,000.000	0.086	0.086	258.000							0.086	258.000
7	section steel	t	5,000.000	0.138	0.138	690.000							0.138	690.000
8	nails	kg	5.200	130.500	130.500	678.600							130.500	678.600
9	cement	t	453.300	9.855	9.855	4,467.272							9.855	4,467.272
10	water	m3	0.450	43.000	43.000	19.350							43.000	19.350
11	fine aggregate	m3	47.310	18.740	18.740	886.589							18.740	886.589
12	coarse aggregate	m3	50.050	22.440	22.440	1,123.122							22.440	1,123.122
13	other material costs	RMB	1.000	528.800	528.800	528.800							528.800	528.800
14	truck 6t	nos·day	225.450	1.640	1.640	369.738							1.640	369.738
15	concrete mixer	nos·day	70.040	2.200	2.200	154.088							2.200	154.088
16	small carrying car	nos·day	87.510	1.370	1.370	119.889							1.370	119.889
17	truck crane	nos·day	513.420	0.720	0.720	369.662							0.720	369.662
18	generator	nos·day	316.140	3.470	3.470	1,097.006							3.470	1,097.006
19	other small equipment cost	RMB	1.000	122.900	122.900	122.900							122.900	122.900
20	basic price	RMB	1.000	17,684.000	17,684.000	17,684.000								17,684.000
21	direct cost	RMB				20,986.419								20,986.419
22	other direct cost	%		5.630		995.609								995.609
23	site expense	%		6.870		1,214.891								1,214.891
24	indirect cost	%		2.540		505.320								505.320
direct construction cost + indirect cost		RMB				23,702.239								23,702.239
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				3,970.000		14,782.000		2,233.000		23,196.000				

Table F-6-37

bus stop（steel roof,W2m,L20m)

item	construction work			bus stop（steel roof,W2m,L20m)									Total	
	content of work			steel roof										
	unit of work			1.000 each										
	quantity of work			1.000 places										
	reference			method of estimation of road project in China 4-6-5										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	96.000	96.000	1,728.000							96.000	1,728.000
2	processed timber	m3	1,255.500	0.040	0.040	50.220							0.040	50.220
3	reinforcing bar- Ⅰ	t	2,378.000	0.068	0.068	161.704							0.068	161.704
4	steel	t	3,000.000	0.459	0.459	1,377.000							0.459	1,377.000
5	section steel	t	5,000.000	0.024	0.024	120.000							0.024	120.000
6	nails	kg	6.500	29.700	29.700	193.050							29.700	193.050
7	paints	kg	13.800	6.300	6.300	86.940							6.300	86.940
8	steel roof	m2	570.000	40.400	40.400	23,028.000							40.400	23,028.000
9	concrete	t	453.300	3.689	3.689	1,672.224							3.689	1,672.224
10	water	m3	0.450	15.000	15.000	6.750							15.000	6.750
11	fine aggregate	m3	47.310	6.410	6.410	303.257							6.410	303.257
12	coarse aggregate	m3	50.050	9.190	9.190	459.960							9.190	459.960
13	under-roof material	m3	19.000	4.680	4.680	88.920							4.680	88.920
14	other material costs	RMB	1.000	96.300	96.300	96.300							96.300	96.300
15	truck 6t	nos･day	225.450	0.820	0.820	184.869							0.820	184.869
16	concrete mixer	nos･day	70.040	0.900	0.900	63.036							0.900	63.036
17	small carrying car	nos･day	87.510	0.410	0.410	35.879							0.410	35.879
18	generator	nos･day	316.140	2.790	2.790	882.031							2.790	882.031
19	other small equipment cost	RMB	1.000	184.500	184.500	184.500							184.500	184.500
20	basic price	RMB	1.000	6,954.000	6,954.000	6,954.000								6,954.000
21	direct cost	RMB				30,722.640								30,722.640
22	other direct cost	%		5.630		391.510								391.510
23	site expense	%		6.870		477.740								477.740
24	indirect cost	%		2.540		198.711								198.711
direct construction cost + indirect cost		RMB				31,790.601								31,790.601
item of direct construction cost		RMB		labor cost 1,728.000		material cost 27,644.000		equipment cost 1,350.000		direct construction cost 31,591.000				

The price of steel roof is based on that in Japan.（￥8,000/m2/14=570RMB/m2)

Table F-6-38

bus stop (steel roof, bench, lighting, sign)

item	construction work			bus stop			lighting			bus stop sign			concrete pavement			Total	
	content of work																
	unit of work			1 place			1000 m			10			1000 m2				
	quantity of work			1 place			0.02*1000m			0.1 ×10			0.04*10/21		0.02*1000m2		
	reference			method of estimation of road project in China 4-6-5						price table 4-3			price table 2-11				
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	96.000	96.000	1,728.000		28.706	516.708		7.000	126.000		8.614	155.052	140.320	2,525.760
2	processed timber	m3	1,255.500	0.040	0.040	50.220		613.604	4,571.350		19.394	1,441.948		16.656	2,088.642	649.694	8,152.160
3	reinforcing bar- I	t	2,378.000	0.068	0.068	161.704										0.068	161.704
4	steel	t	3,000.000	0.459	0.459	1,377.000										0.459	1,377.000
5	section steel	t	5,000.000	0.024	0.024	120.000										0.024	120.000
6	reinforcing mesh	kg	6.500	29.700	29.700	193.050										29.700	193.050
7	paints	kg	13.800	6.300	6.300	86.940										6.300	86.940
8	steel roof	m2	570.000	40.400	40.400	23,028.000										40.400	23,028.000
9	concrete	t	453.300	3.689	3.689	1,672.224										3.689	1,672.224
10	water	m3	0.450	15.000	15.000	6.750										15.000	6.750
11	fine aggregate	m3	47.310	6.410	6.410	303.257										6.410	303.257
12	coarse aggregate	m3	50.050	9.190	9.190	459.960										9.190	459.960
13	under-roof material	m3	19.000	4.680	4.680	88.920										4.680	88.920
14	bench	each	500.000	2.000	2.000	1,000.000										2.000	1,000.000
15	other material costs	RMB	1.000	96.300	96.300	96.300										96.300	96.300
16	truck 6t	nos·day	225.450	0.820	0.820	184.869		3.917	275.955		0.760	81.816		3.796	431.584	9.293	974.223
17	concrete mixer	nos·day	70.040	0.900	0.900	63.036										0.900	63.036
18	concrete-carrying car	nos·day	87.510	0.410	0.410	35.879										0.410	35.879
19	generator	nos·day	316.140	2.790	2.790	882.031										2.790	882.031
20	other small equipment cost	RMB	1.000	184.500	184.500	184.500										184.500	184.500
21	basic price	RMB	1.000	6,954.000	6,954.000	6,954.000											6,954.000
22	direct cost	RMB				31,722.640			5,364.013			1,649.763			2,675.278		41,411.694
23	other direct cost	%		5.630		391.510			331.671			279.094			130.475		1,132.750
24	site expense	%		6.870		477.740			659.227			255.198			159.198		1,551.363
25	indirect cost	%		2.540		198.711			298.681			89.255			66.205		652.852
direct construction cost + indirect cost		RMB				32,790.601			6,653.592			2,273.310			3,031.155		44,748.659

Table F-6-39

steel-H piling of temporary work

item	construction work			steel-H piling of temporary work									Total	
	content of work			piling length 7．5m , drilling			pulling out							
	unit of work			1.000 pile			1.000 pile							
	quantity of work			1.000 pile			1.000 pile							
	reference			method of estimation of construction in Japan(p217)			method of estimation of construction in Japan(p217)							
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	12.100	12.100	217.800	0.200	0.200	3.600				12.300	221.400
2	steel-H piling	t	175.000	1.290	1.290	225.750							1.290	225.750
3	cement	t	453.300	1.100	1.100	498.630							1.100	498.630
4	other expenses	RMB	1.000	981.523	981.523	981.523							981.523	981.523
5	crawler base machine	nos·day	1,542.530	1.340	1.340	2,066.990							1.340	2,066.990
6	rock auger	nos·day	647.760	1.340	1.340	867.998							1.340	867.998
7	crawler crane	nos·day	814.400	0.670	0.670	545.648	0.022	0.022	17.917				0.692	563.565
8	concrete mixer	nos·day	70.040	1.300	1.300	91.052							1.300	91.052
9	concrete pump	nos·day	105.080	1.300	1.300	136.604							1.300	136.604
10	vibrating pile driver	nos·day	1,085.220				0.022	0.022	23.875				0.022	23.875
11	other small equipment cost	RMB												
12	basic price	RMB												
13	direct cost	RMB				5,631.995			45.392					5,677.387
14	other direct cost	%		18.220		1,026.149	18.220		8.270					1,034.419
15	site expense	%		16.660		938.290	16.660		7.562					945.852
16	indirect cost	%		4.320		328.166	4.320		2.645					330.811
direct construction cost + indirect cost		RMB				7,924.600			63.869					7,988.469
item		RMB		labor cost		material cost		equipment cost		direct construction cost				
				221.000		1,705.000		3,750.000		7,657.000				
												per m（each/7.5m)		1,065.000

The price of steel-H 2800RMB/16= 175 (4 circles 4 sites) net weight of steel-H＝7．5m*172kg/m=1.29t

Other expense s involved in replacing rock auger bit and sleevings and buying scaffold.

Table F-6-40

temporary work (timbering)

item	construction work			temporary work (timbering)									Total	
	content of work			set-up (wale,strut)			remove(wale,strut)							
	unit of work			10.000 t			10.000 t							
	quantity of work			1.000 ×10t			1.000 ×10t							
	reference			method of estimation of construction in Japan(p501)			method of estimation of construction in Japan(p501)							
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	15.000	15.000	270.000	8.700	8.700	156.600				23.700	426.600
2	wale,strut	t	175.000	10.000	10.000	1,750.000							10.000	1,750.000
3	other expense (10% of labor cost)	RMB	1.000	27.000	27.000	27.000	15.660	15.660	15.660				42.660	42.660
4	crane of 25t	nos･day	1,013.570	1.500	1.500	1,520.355	0.900	0.900	912.213				2.400	2,432.568
5	other small equipment cost	RMB												
6	basic price	RMB												
7	direct cost	RMB				3,567.355			1,084.473					4,651.828
8	other direct cost	%		18.220		649.972	18.220		197.591					847.563
9	site expense	%		16.660		594.321	16.660		180.673					774.994
10	indirect cost	%		4.320		207.863	4.320		63.190					271.053
direct construction cost + indirect cost		RMB				5,019.511			1,525.927					6,545.438
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				426		1,792		2,432		6,274				

price of steel-H 2800RMB/16= 175 (4 circles 4 points)

Table F-6-41

temporary work (lagging)

item	construction work			temporary work (lagging)									Total	
	content of work			set-up ,remove										
	unit of work			10.000 m2										
	quantity of work			1.000 ＊10m2										
	reference			method of estimation of construction in Japan(p501)										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	3.000	3.000	54.000							3.000	54.000
2	timber board	m3	306.375	0.500	0.500	153.188							0.500	153.188
3	other expense	RMB												
4	other small equipment cost	RMB												
5	basic price	RMB												
6	direct cost	RMB				207.188								207.188
7	other direct cost	%		18.220		37.750								37.750
8	site expense	%		16.660		34.518								34.518
9	indirect cost	%		4.320		12.072								12.072
direct construction cost + indirect cost		RMB				291.528								291.528
item of direct construction cost		RMB		labor cost 54.000		material cost 153.000		equipment cost		direct construction cost 279.000				

transverse timber board t=5cm 1225.5RMB/m3/4=306.375 (2circles 2points)

Table F-6-42

safety fence and scaffold work

item	construction work			safety fence and scaffold work									Total	
	content of work													
	unit of work			100.000 ×100m2										
	quantity of work			1.000 ×100m2										
	reference			method of estimation of construction in Japan(p501)										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	20.000	20.000	360.000							20.000	360.000
2	other expense	RMB	1.000	585.428	585.428	585.428							585.428	585.428
3	truck crane 25t	nos·day	1,013.570	0.800	0.800	810.856							0.800	810.856
4	other small equipment cost	RMB												
5	basic price	RMB												
6	direct cost	RMB				1,756.284								1,756.284
7	other direct cost	%		18.220		319.995								319.995
8	site expense	%		16.660		292.597								292.597
9	indirect cost	%		4.320		102.335								102.335
direct construction cost + indirect cost		RMB				2,471.211								2,471.211
item of direct construction cost		RMB		labor cost 360.000		material cost 585.000		equipment cost 810.000		direct construction cost 2,368.000				

Other expense involved in diagonal braces, hand rails, stairs and safety netting, etc.

Table F-6-43

reinforcing bar arrangement for pedestrian bridge

item	construction work			reinforcing bar arrangement for pedestrian bridge									Total	
	content of work													
	unit of work			1.000 t										
	quantity of work			1.000 *t										
	reference			method of estimation of road project in China 4-6-5										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	29.500	29.500	531.000							29.500	531.000
2	reinforcing bar- Ⅰ	t	2,378.000	0.836	0.836	1,988.008							0.836	1,988.008
3	reinforcing bar- Ⅱ	t	2,460.000	0.209	0.209	514.140							0.209	514.140
4	reinforcing mesh	kg	6.500	12.000	12.000	78.000							12.000	78.000
5	other material expenses	RMB	1.000											
6	generator	nos·day	316.140	2.250	2.250	711.315							2.250	711.315
7	other small equipment cost	RMB	1.000	0.100	0.100	0.100							0.100	0.100
8	basic price	RMB	1.000	3,511.000	3,511.000	3,511.000								3,511.000
9	direct cost	RMB				3,822.563								3,822.563
10	other direct cost	%		6.450		226.460								226.460
11	site expense	%		12.820		450.110								450.110
12	indirect cost	%		4.870		203.935								203.935
direct construction cost + indirect cost		RMB				4,703.068								4,703.068
item of direct construction cost		RMB		labor cost 531.000		material cost 2,580.000		equipment cost 711.000		direct construction cost 4,499.000				

Table F-6-44

pedestrian bridge TypeA superstructure main girder and floor bridge length=34.2m

item	construction work			pedestrian bridge TypeA superstructure main girder and floor									Total	
	content of work			fabrication , erection										
	unit of work			1.000 bridge										
	quantity of work			1.000 bridge										
	reference			method of estimation of construction in Japan(p700)										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	41.000	41.000	738.000							41.000	738.000
2	main girder, transverse beam etc	t	10,000.000	22.000	22.000	220,000.000							22.000	220,000.000
3	floor	t	10,000.000	5.100	5.100	51,000.000							5.100	51,000.000
4	bearing	each	1,900.000	12.000	12.000	22,800.000							12.000	22,800.000
5	expansion joint	m	2,570.000	14.000	14.000	35,980.000							14.000	35,980.000
6	other cost (20% of labor costs)	RMB	1.000	147.600	147.600	147.600							147.600	147.600
7	truck crane25t	nos･day	1,013.570	3.400	3.400	3,446.138							3.400	3,446.138
8	other small equipment cost	RMB												
9	basic price	RMB												
10	direct cost	RMB				334,111.738								334,111.738
11	other direct cost	%		6.450		21,550.207								21,550.207
12	site expense	%		12.820		42,833.125								42,833.125
13	indirect cost	%		4.870		19,406.710								19,406.710
direct construction cost + indirect cost		RMB				417,901.780								417,901.780
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				738		329,927		3,446		398,495				

Other cost is that involved inconsumption of material, temporary fixed screw, frame tools and electric, etc.

The quantity of steel beams include that of screws

Bearing costs include that of setting-up, etc.(The price is based on that in Japan\27,000/14=1900RMB 450*300*40)

Expansion joint costs include that of setting-up, etc.(The price is based on that in Japan\36,000/14=2570RMB/m moveable distance 20mm)

Table F-6-45

pedestrian bridge TypeB superstructure main girder and floor bridge length=37.2m

item	construction work			pedestrian bridge TypeB superstructure main girder and floor									Total	
	content of work			fabrication , erection										
	unit of work			1.000 bridge										
	quantity of work			1.000 bridge										
	reference			method of estimation of construction in Japan(p700)										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	41.000	41.000	738.000							41.000	738.000
2	main girder，transverse beam etc	t	10,000.000	23.600	23.600	236,000.000							23.600	236,000.000
3	floor	t	10,000.000	5.600	5.600	56,000.000							5.600	56,000.000
4	bearing	each	1,900.000	12.000	12.000	22,800.000							12.000	22,800.000
5	expansion joint	m	2,570.000	14.000	14.000	35,980.000							14.000	35,980.000
6	other cost (20% of labor costs)	RMB	1.000	147.600	147.600	147.600							147.600	147.600
7	truck crane25t	nos·day	1,013.570	3.400	3.400	3,446.138							3.400	3,446.138
8	other small equipment cost	RMB												
9	basic price	RMB												
10	direct cost	RMB				355,111.738								355,111.738
11	other direct cost	%		6.450		22,904.707								22,904.707
12	site expense	%		12.820		45,525.325								45,525.325
13	indirect cost	%		4.870		20,626.484								20,626.484
direct construction cost + indirect cost		RMB				444,168.254								444,168.254
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				738.000		350,927.000		3,446.000		423,541.000				

Other cost is that involved inconsumption of material，temporary fixed screw，frame tools and electric，etc.

The quantity of steel beams include that of screws

Bearing costs include that of setting-up，etc.(The price is based on that in Japan￥27,000/14=1900RMB 450*300*40）

Expansion joint costs include that of setting-up，etc.（The price is based on that in Japan￥36,000/14=2570RMB/m moveable distance 20mm）

Table F-6-46

pedestrian bridge superstructure stairs

item	construction work			pedestrian bridge superstructure stairs									Total	
	content of work			fabrication , erection										
	unit of work			1.000 bridge										
	quantity of work			1.000 bridge										
	reference			method of estimation of construction in Japan(p700)										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	27.000	27.000	486.000							27.000	486.000
2	main girder	t	10,000.000	14.000	14.000	140,000.000							14.000	140,000.000
3	bearing	each	1,900.000											
4	expansion joint	m	2,570.000											
5	other cost (20% of labor costs)	RMB	1.000	97.200	97.200	97.200							97.200	97.200
6	truck crane25t	nos·day	1,013.570	2.200	2.200	2,229.854							2.200	2,229.854
7	other small equipment cost	RMB												
8	basic price	RMB												
9	direct cost	RMB				142,813.054								142,813.054
10	other direct cost	%		6.450		9,211.442								9,211.442
11	site expense	%		12.820		18,308.634								18,308.634
12	indirect cost	%		4.870		8,295.223								8,295.223
direct construction cost + indirect cost		RMB				178,628.353								178,628.353
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				486.000		140,097.000		2,229.000		170,333.000				

Other cost is that involved inconsumption of material, temporary fixed screw, frame tools and electric, etc.

The quantity of steel beams include that of screws

Table F-6-47

pedestrian bridge steel pier

item	construction work			pedestrian bridge steel pier									Total	
	content of work			fabrication , erection			scaffold building							
	unit of work			1.000 bridge			100.000 *100m2							
	quantity of work			1.000 bridge			40m2 / br 0.400 *100m2							
	reference			method of estimation of construction in Japan(p700)			method of estimation of construction in Japan(p250)							
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	41.000	41.000	738.000		6.400	115.200				47.400	853.200
2	steel beam	t	10,000.000	0.620	0.620	6,200.000		109.886	109.886				110.506	6,309.886
3	steel column	t	10,000.000	7.300	7.300	73,000.000							7.300	73,000.000
4	other cost (20% of labor costs)	RMB	1.000	147.600	147.600	147.600							147.600	147.600
5	truck crane25t	nos·day	1,013.570	3.400	3.400	3,446.138		0.320	324.342				3.720	3,770.480
6	other small equipment cost	RMB												
7	basic price	RMB												
8	direct cost	RMB				83,531.738			549.428					84,081.166
9	other direct cost	%		6.450		5,387.797	6.450		35.438					5,423.235
10	site expense	%		12.820		10,708.769	12.820		70.437					10,779.206
11	indirect cost	%		4.870		4,851.898	4.870		31.913					4,883.811
direct construction cost + indirect cost		RMB				104,480.202			687.216					105,167.418
item of direct construction cost		RMB		labor cost 853.000		material cost 79,457.000		equipment cost 3,770.000		direct construction cost 100,283.000				

other costs include that involved inconsumption of crab bolts, falsework material, temporary fixed screws, frame tools and electric, etc.

Table F-6-48

pedestrian bridge scaffolding

item	construction work			pedestrian bridge scaffolding									Total	
	content of work			fabricated scaffolding										
	unit of work			100.000 *100m2										
	quantity of work			1.000 *100m2										
	reference			method of estimation of construction in Japan(p250)										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	16.000	16.000	288.000							16.000	288.000
2	other cost (20% of labor costs)	RMB	1.000	274.714	274.714	274.714							274.714	274.714
3	truck crane25t	nos･day	1,013.570	0.800	0.800	810.856							0.800	810.856
4	other small equipment cost	RMB												
5	basic price	RMB												
6	direct cost	RMB				1,373.570								1,373.570
7	other direct cost	%		6.450		88.595								88.595
8	site expense	%		12.820		176.092								176.092
9	indirect cost	%		4.870		79.783								79.783
direct construction cost + indirect cost		RMB				1,718.040								1,718.040
item of direct construction cost		RMB		labor cost 288.000		material cost 274.000		equipment cost 810.000		direct construction cost 1,638.000				

Other costs refer to that of temporary device, connecting pin, backing plate, frame, hand rail and stairway, etc.

Table F-6-49

pedestrian bridge cast-in site pile

item	construction work			pedestrian bridge cast-in site pile									Total	
	content of work			concrete work			reinforcing arrangement（60kg/m3)							
	unit of work			10.000 m3			1.000 t							
	quantity of work			1.000 *10m3			(10m3:60kg) 0.600 *t							
	reference			method of estimation of road project in China 5-13-1										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	35.300	35.300	635.400		17.700	318.600				53.000	954.000
2	cement	t	453.300	5.304	5.304	2,404.303		7.827	1,548.089				13.131	3,952.392
3	water	m3	0.450	2.000	2.000	0.900							2.000	0.900
4	fine aggregate	m3	47.310	5.590	5.590	264.463							5.590	264.463
5	coarse aggregate	m3	50.050	8.210	8.210	410.911							8.210	410.911
6	other material costs	RMB	1.000	19.200	19.200	19.200							19.200	19.200
7	concrete mixer	nos·day	70.040	1.030	1.030	72.141		1.410	426.849				2.440	498.990
8	winch	nos·day	73.210	1.350	1.350	98.834							1.350	98.834
9	other small equipment cost	RMB	1.000											
10	basic price	RMB	1.000	2,986.000	2,986.000	2,986.000		2,106.600	2,106.600					5,092.600
11	direct cost	RMB				3,906.152			2,293.538					6,199.690
12	other direct cost	%		18.220		544.049	6.450		135.876					679.925
13	site expense	%		16.660		497.468	12.820		270.066					767.534
14	indirect cost	%		4.320		173.989	4.870		122.361					296.350
direct construction cost + indirect cost		RMB				5,121.658			2,821.841					7,943.499
item of direct construction cost		RMB		labor cost 954.000		material cost 4,647.000		equipment cost 597.000		direct construction cost 7,647.000				

Table F-6-50

pedestrian bridge cast-in site pile excavation

item	construction work			pedestrian bridge cast-in site pile excavation									Total	
	content of work			d=1.5m sand and soil										
	unit of work			10.000 m										
	quantity of work			1.000 *10m										
	reference			method of estimation of road project in China 5-7-7										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	462.300	462.300	8,321.400							462.300	8,321.400
2	timber	m3	1,064.800	0.052	0.052	55.370							0.052	55.370
3	processed timber	m3	1,255.500	0.038	0.038	47.709							0.038	47.709
4	nails	kg	5.200	1.600	1.600	8.320							1.600	8.320
5	water	m3	0.450	11.000	11.000	4.950							11.000	4.950
6	clay	m3	5.000	7.650	7.650	38.250							7.650	38.250
7	other material costs	RMB	1.000	56.600	56.600	56.600							56.600	56.600
8	generator	nos·day	316.140	0.070	0.070	22.130							0.070	22.130
9	other small equipment cost	RMB	1.000	62.400	62.400	62.400							62.400	62.400
10	basic price	RMB	1.000	7,704.000	7,704.000	7,704.000								7,704.000
11	direct cost	RMB				8,617.129								8,617.129
12	other direct cost	%		18.220		1,403.669								1,403.669
13	site expense	%		16.660		1,283.486								1,283.486
14	indirect cost	%		4.320		448.898								448.898
direct construction cost + indirect cost		RMB				11,753.182								11,753.182
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				8,321		211		84		11,304				

Table F-6-51

pedestrian bridge floor concrete

item	construction work			pedestrian bridge floor									Total	
	content of work			mixing and pouring concrete			curing concrete							
	unit of work			10.000 m3			10.000 m3							
	quantity of work			1.000 *10m3			1.000 *10m3							
	reference			method of estimation of construction in Japan(p212)			method of estimation of construction in Japan(p212)							
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	3.000	3.000	54.000	0.140	0.140	2.520				3.140	56.520
2	cement	t	453.300	3.200	3.200	1,450.560							3.200	1,450.560
3	water	m3	0.450	17.000	17.000	7.650							17.000	7.650
4	fine aggregate	m3	47.310	6.700	6.700	316.977							6.700	316.977
5	coarse aggregate	m3	50.050	9.500	9.500	475.475							9.500	475.475
6	other costs	RMB	1.000	8.034	8.034	8.034	1.008	1.008	1.008				9.042	9.042
7	concrete mixer	nos·day	70.040	1.000	1.000	70.040							1.000	70.040
8	truck crane	nos·day	513.420	0.280	0.280	143.758							0.280	143.758
9	generator	nos·day												
10	other small equipment cost	RMB												
11	basic price	RMB												
12	direct cost	RMB				2,526.494			3.528					2,530.022
13	other direct cost	%		6.450		162.959	6.450		0.228					163.187
14	site expense	%		12.820		323.897	12.820		0.452					324.349
15	indirect cost	%		4.870		146.750	4.870		0.205					146.955
direct construction cost + indirect cost		RMB				3,160.100			4.413					3,164.513
item of direct construction cost		RMB		labor cost 56.000		material cost 2,259.000		equipment cost 213.000		direct construction cost 3,017.000				

Other costs involved in mixing and pouring concrete is 3% of（labor and machine costs）

Other cost involved in curing concrete is 40% of labor costs

Table F-6-52

pedestrian bridge stairs mortar method

item	construction work			pedestrian bridge stairs mortar method									Total	
	content of work			mixing and pouring motor			method ofcuring							
	unit of work			10.000 m3			10.000 m3							
	quantity of work			1.000 *10m3			1.000 *10m3							
	reference			method of estimation of construction in Japan(p212)			method of estimation of construction in Japan(p212)							
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	3.000	3.000	54.000	0.140	0.140	2.520				3.140	56.520
2	cement	t	453.300	7.200	7.200	3,263.760							7.200	3,263.760
3	water	m3	0.450	17.000	17.000	7.650							17.000	7.650
4	fine aggregate	m3	47.310	9.500	9.500	449.445							9.500	449.445
5	coarse aggregate	m3	50.050											
6	odd costs	RMB	1.000	5.878	5.878	5.878	1.008	1.008	1.008				6.886	6.886
7	concrete mixer	nos·day	70.040	1.000	1.000	70.040							1.000	70.040
8	truck crane	nos·day	513.420	0.140	0.140	71.879							0.140	71.879
9	generator	nos·day												
10	other small equipment cost	RMB												
11	basic price	RMB												
12	direct cost	RMB				3,922.652			3.528					3,926.180
13	other direct cost	%		6.450		253.011	6.450		0.228					253.239
14	site expense	%		12.820		502.884	12.820		0.452					503.336
15	indirect cost	%		4.870		227.845	4.870		0.205					228.050
direct construction cost + indirect cost		RMB				4,906.392			4.413					4,910.805
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				56		3,727		141		4,682				

Other costs involved in mixing and pouring concrete is 3% of labor and machine costs

Other cost involved in curing concrete is 40% of labor costs

Table F-6-53

pedestrian bridge handrail

item	construction work			pedestrian bridge handrail									Total	
	content of work													
	unit of work			100.000 m										
	quantity of work			1.000 ×100m										
	reference			method of estimation of road project in China 6-3-1										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	77.300	77.300	1,391.400							77.300	1,391.400
2	aluminum	t	8,750.000	2.167	2.167	18,961.250							2.167	18,961.250
3	nails	kg	6.500	118.300	118.300	768.950							118.300	768.950
4	steel fence	m2	21.100	164.000	164.000	3,460.400							164.000	3,460.400
5	cement	t	453.300	2.229	2.229	1,010.406							2.229	1,010.406
6	water	m3	0.450	7.000	7.000	3.150							7.000	3.150
7	fine aggregate	m3	47.310	3.070	3.070	145.242							3.070	145.242
8	coarse aggregate	m3	50.050	5.380	5.380	269.269							5.380	269.269
9	other material costs	RMB	1.000	38.600	38.600	38.600							38.600	38.600
10	truck of 6t	nos·day	225.450	2.260	2.260	509.517							2.260	509.517
11	diesel generator	nos·day	316.140	19.240	19.240	6,082.534							19.240	6,082.534
12	other small equipment cost	RMB	1.000	89.300	89.300	89.300							89.300	89.300
13	basic price	RMB	1.000	14,474.000	14,474.000	14,474.000								14,474.000
14	direct cost	RMB				32,730.018								32,730.018
15	other direct cost	%		6.450		933.573								933.573
16	site expense	%		12.820		1,855.567								1,855.567
17	indirect cost	%		4.870		840.715								840.715
direct construction cost + indirect cost		RMB				36,359.873								36,359.873
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				1,391		24,657		6,681		35,519				

Table F-6-54

pedestrian bridge draining pipe

item	construction work			pedestrian bridge draining pipe									Total	
	content of work			fabrication, set-up										
	unit of work			10.000 m										
	quantity of work			1.000 ×10m										
	reference			method of estimation of construction in Japan(p698)										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	4.000	4.000	72.000							4.000	72.000
2	draining pipe	t	4,000.000	0.100	0.100	400.000							0.100	400.000
3	other costs	RMB	1.000	141.600	141.600	141.600							141.600	141.600
4	crane 12t	nos·day	513.420	0.700	0.700	359.394							0.700	359.394
5	other small equipment cost	RMB												
6	basic price	RMB												
7	direct cost	RMB				972.994								972.994
8	other direct cost	%		6.450		62.758								62.758
9	site expense	%		12.820		124.738								124.738
10	indirect cost	%		4.870		56.516								56.516
direct construction cost + indirect cost		RMB				1,217.006								1,217.006
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				72		541		359		1,160				

The price of draining pipe is based on that in Japan(￥56000/14=4000RMB,unit quality 10kg/m*10m=0.1)

Other costs are 30% of that involved in painting, connecting pins, etc.

Table F-6-55

pedestrian bridge painting

item	construction work			pedestrian bridge painting									Total	
	content of work			paint two times										
	unit of work			100.000 m2										
	quantity of work			1.000 *100m2										
	reference			method of estimation of construction in Japan(p801)										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	9.000	9.000	162.000							9.000	162.000
2	bottom paint	kg	20.000	106.000	106.000	2,120.000							106.000	2,120.000
3	mid-paint	kg	40.000	82.000	82.000	3,280.000							82.000	3,280.000
4	surface paint	kg	85.000	74.000	74.000	6,290.000							74.000	6,290.000
5	other costs (5% of labor costs)	RMB	1.000	8.100	8.100	8.100							8.100	8.100
6	lift	nos･day	256.710	1.700	1.700	436.407							1.700	436.407
7	other small equipment cost	RMB												
8	basic price	RMB												
9	direct cost	RMB				12,296.507								12,296.507
10	other direct cost	%		6.450		793.125								793.125
11	site expense	%		12.820		1,576.412								1,576.412
12	indirect cost	%		4.870		714.236								714.236
direct construction cost + indirect cost		RMB				15,380.280								15,380.280
item of direct construction cost		RMB		labor cost 162.000		material cost 11,698.000		equipment cost 436.000		direct construction cost 14,666.000				

Table F-6-56

bicycle parking place typeA（floor area:1000m2）

item	construction work			large-scale bicycle parking place（floor area:1000m2）									Total	
	content of work			fabrication,erection										
	unit of work			1000 m2										
	quantity of work			1 *1000m2										
	reference													
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	62.000	62.000	1,116.000							62.000	1,116.000
2	steel column	t	5,000.000	18.000	18.000	90,000.000							18.000	90,000.000
3	floor （deck plate）	t	5,000.000	65.000	65.000	325,000.000							65.000	325,000.000
4	stairway	t	5,000.000	6.500	6.500	32,500.000							6.500	32,500.000
5	roof	m2	70.000	1,100.000	1,100.000	77,000.000							1,100.000	77,000.000
6	roof frame	t	2,800.000	10.500	10.500	29,400.000							10.500	29,400.000
7	other costs (20% of labor costs)	RMB	1.000	223.200	223.200	223.200							223.200	223.200
8	crane 25t	nos･day	1,013.570	5.100	5.100	5,169.207							5.100	5,169.207
9	other small equipment cost	RMB												
10	basic price	RMB												
11	direct cost	RMB				560,408.407								560,408.407
12	other direct cost	%		6.450		36,146.342								36,146.342
13	site expense	%		12.820		71,844.358								71,844.358
14	indirect cost	%		4.870		32,551.037								32,551.037
direct construction cost + indirect cost		RMB				700,950.144								700,950.144
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				1,116		554,123		5,169		668,399				

Table F-6-57

bicycle parking place typeB（floor area:600m2）

item	construction work			bicycle parking place typeB（floor area:600m2）									Total	
	content of work			fabrication,erection										
	unit of work			300.000 m2										
	quantity of work			0.300 *1000m2										
	reference													
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	62.000	18.600	334.800							18.600	334.800
2	steel column	t	5,000.000	18.000	5.400	27,000.000							5.400	27,000.000
3	floor （deck plate）	t	5,000.000	65.000	19.500	97,500.000							19.500	97,500.000
4	stairway	t	5,000.000	6.500	1.950	9,750.000								
5	roof	m2	70.000	1,100.000	330.000	23,100.000								
6	roof frame	t	2,800.000	10.500	3.150	8,820.000								
7	other costs (20% of labor costs)	RMB	1.000	66.960	20.088	20.088							20.088	20.088
8	crane 25t	nos･day	1,013.570	5.100	1.530	1,550.762							1.530	1,550.762
9	other small equipment cost	RMB												
10	basic price	RMB												
11	direct cost	RMB				168,075.650								168,075.650
12	other direct cost	%		6.450		10,840.879								10,840.879
13	site expense	%		12.820		21,547.298								21,547.298
14	indirect cost	%		4.870		9,762.588								9,762.588
direct construction cost + indirect cost		RMB				210,226.415								210,226.415
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				334.000		124,520.000		1,550.000		200,463.000				

Table F-6-58

bicycle parking floor concrete work

item	construction work			bicycle parking floor concrete work									Total	
	content of work			mixing and pouring concrete			curing concrete							
	unit of work			10.000 m3			10.000 m3							
	quantity of work			1.000 *10m3			1.000 *10m3							
	reference			method of estimation of construction in Japan(p700)			method of estimation of construction in Japan(p700)							
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	3.000	3.000	54.000	0.140	0.140	2.520				3.140	56.520
2	cement	t	453.300	3.200	3.200	1,450.560							3.200	1,450.560
3	water	m3	0.450	17.000	17.000	7.650							17.000	7.650
4	fine aggregate	m3	47.310	6.700	6.700	316.977							6.700	316.977
5	coarse aggregate	m3	50.050	9.500	9.500	475.475							9.500	475.475
6	other costs	RMB	1.000	8.034	8.034	8.034	1.008	1.008	1.008				9.042	9.042
7	concrete mixer	nos·day	70.040	1.000	1.000	70.040							1.000	70.040
8	truck crane	nos·day	513.420	0.280	0.280	143.758							0.280	143.758
9	generator	nos·day												
10	other small equipment cost	RMB												
11	basic price	RMB												
12	direct cost	RMB				2,526.494			3.528					2,530.022
13	other direct cost	%		6.450		162.959	6.450		0.228					163.187
14	site expense	%		12.820		323.897	12.820		0.452					324.349
15	indirect cost	%		4.870		146.750	4.870		0.205					146.955
direct construction cost + indirect cost		RMB				3,160.100			4.413					3,164.513
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				56		2,259		213		3,017				

Other costs involved in mixing and pouring concrete as 3% of labor and equipment costs

Other costs involved in curing concrete as 40% of labor and equipment costs

Table F-6-59

Base course (asphalt stabilize)

item	construction work			Base course (asphalt stabilize)									Total	
	content of work			asphalt stabilize(less than t= 15cm)										
	unit of work			1,000.000 m2										
	quantity of work			1.000 *1000m2										
	reference			method of estimation of road project in China 2-6-7										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	30.300	30.300	545.400							30.300	545.400
2	asphalt	t	1,899.500	4.000	4.000	7,598.000							4.000	7,598.000
3	coarse aggregate	m3	50.050	210.510	210.510	10,536.026							210.510	10,536.026
4	soil	m3												
5	fine aggregate	m3												
6	other material expenses	RMB												
7	motor grader 90kw	nos･day	436.890	0.490	0.490	214.076							0.490	214.076
8	macadam road roller 8 t	nos･day	208.570	0.380	0.380	79.257							0.380	79.257
9	macadam road roller 15 t	nos･day	297.140	1.580	1.580	469.481							1.580	469.481
10	mixer	nos･day	70.040	0.340	0.340	23.814							0.340	23.814
11	road sprinkler4000l	nos･day	263.070	1.000	1.000	263.070							1.000	263.070
12	other small equipment cost	RMB												
13	basic price	RMB	1.000	13,697.000	13,697.000	13,697.000								13,697.000
14	direct cost	RMB				19,729.124								19,729.124
15	other direct cost	%		18.220		2,495.593								2,495.593
16	site expense	%		16.660		2,281.920								2,281.920
17	indirect cost	%		4.320		798.099								798.099
direct construction cost + indirect cost		RMB				25,304.736								25,304.736
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				545		18,134		1,049		24,506				

asphalt＝4l/m2

Table F-6-60

asphalt pavement

item	construction work			asphalt pavement(color pavement t=3cm)									Total	
	content of work			fine aggr.(concrete plant 30t/h)			truck transportation (distance 1km)			transport distance (add.every 1km)				
	unit of work			100.000 m3			100.000 m3			100.000 m3				
	quantity of work			1.000 *100m3			1.000 *100m3			9.000 *100m3				
	reference			method of estimation of road project in China 2-23-12			method of estimation of road project in China 2-23-42			method of estimation of road project in China 2-23-46				
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	38.200	38.200	687.600							38.200	687.600
2	asphalt	t	1,899.500	14.040	14.040	26,668.980							14.040	26,668.980
3	fine aggregate	m3	47.310	25.760	25.760	1,218.706							25.760	1,218.706
4	steel dust	t	95.000	9.430	9.430	895.850							9.430	895.850
5	stone dust	m3	31.500	15.570	15.570	490.455							15.570	490.455
6	coarse aggregate	m3	50.050	109.020	109.020	5,456.451							109.020	5,456.451
7	paints (for color pavement)	t	25,000.000											
8	other material expenses	RMB	1.000	16.100	16.100	16.100							16.100	16.100
9	shovel 1m3	nos·day	337.630	2.150	2.150	725.905							2.150	725.905
10	macadam road roller 8 t	nos·day	208.570	2.320	2.320	483.882							2.320	483.882
11	macadam road roller 15 t	nos·day	297.140	2.320	2.320	689.365							2.320	689.365
12	asphalt plant 30t/h	nos·day	2,318.710	2.270	2.270	5,263.472							2.270	5,263.472
13	asphalt finisher	nos·day	1,145.050	2.320	2.320	2,656.516							2.320	2,656.516
14	tire roller	nos·day	263.580	2.320	2.320	611.506							2.320	611.506
15	boiler	nos·day	436.150	2.360	2.360	1,029.314							2.360	1,029.314
16	truck 6t	nos·day	225.450				2.120	2.120	477.954	0.370	3.330	750.749	5.450	1,228.703
17	other small equipment cost	RMB												
18	basic price	RMB	1.000	34,708.000	34,708.000	34,708.000	872.000	872.000	872.000	152.000	1,368.000	1,368.000		36,948.000
19	direct cost	RMB				46,894.102			477.954			750.749		48,122.805
20	other direct cost	%		5.630		1,954.060	5.630		49.094	5.630		77.018		2,080.172
21	site expense	%		6.870		2,384.440	6.870		59.906	6.870		93.982		2,538.328
22	indirect cost	%		2.540		991.781	2.540		24.917	2.540		39.091		1,055.789
direct construction cost + indirect cost		RMB				52,224.383			611.871			960.840		53,797.094
item of direct construction cost		RMB		labor cost		material cost		equipment cost		direct construction cost				
				687.000		34,746.000		12,688.000		52,741.000				
												unit m2 (RMB/100m3*0.03m)		16.000

Table F-6-61

bicycle parking place guardrail

item	construction work			bicycle parking place guardrail									Total	
	content of work													
	unit of work			100.000 m										
	quantity of work			1.000 ×100m										
	reference			method of estimation of road project in China 2-23-12										
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	77.300	77.300	1,391.400							77.300	1,391.400
2	steel	t	3,000.000	2.167	2.167	6,501.000							2.167	6,501.000
3	nails	kg	6.500	118.300	118.300	768.950							118.300	768.950
4	steel fence	m2	21.100	164.000	164.000	3,460.400							164.000	3,460.400
5	cement	t	453.300	2.229	2.229	1,010.406							2.229	1,010.406
6	water	m3	0.450	7.000	7.000	3.150							7.000	3.150
7	fine aggregate	m3	47.310	3.070	3.070	145.242							3.070	145.242
8	coarse aggregate	m3	50.050	5.380	5.380	269.269							5.380	269.269
9	other material cost	RMB	1.000	38.600	38.600	38.600							38.600	38.600
10	truck 6t	nos·day	225.450	2.260	2.260	509.517							2.260	509.517
11	generator	nos·day	316.140	19.240	19.240	6,082.534							19.240	6,082.534
12	other small equipment cost	RMB	1.000	89.300	89.300	89.300							89.300	89.300
13	basic price	RMB	1.000	14,474.000	14,474.000	14,474.000								14,474.000
14	direct cost	RMB				20,269.768								20,269.768
15	other direct cost	%		18.220		2,637.163								2,637.163
16	site expense	%		16.660		2,411.368								2,411.368
17	indirect cost	%		4.320		843.373								843.373
direct construction cost + indirect cost		RMB				26,161.672								26,161.672
item of direct construction cost		RMB		labor cost 1,391		material cost 12,197		equipment cost 6,681		direct construction cost 25,318				

Table F-6-62

bicycle parking place　Type-A（floor area:1000m2)

item	construction work			deck plate, roof, column			asphalt pavement			deck plate concrete			bed course asphalt stabilize			guardrail			Total	
	content of work			fabrication, erection																
	unit of work			1,000 m2			100 m3			100 m3			1,000 m2			100 m				
	quantity of work			1.000 *1000m2			0.480 *100m3			1.500 *100m3			1.600 *1000m2			1.600 ×100m				
	reference			price table 37,044.000																
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	62.000	62.000	1,116.000		18.336	330.048		4.710	84.780		48.480	872.640		123.680	2,226.240	257.206	4,629.708
2	steel column	t	5,000.000	18.000	18.000	90,000.000		91.162	16,678.340		68.163	3,389.556		343.216	29,014.442		545.194	19,515.227	1,065.734	158,597.565
3	floor （deck plate）	t	5,000.000	65.000	65.000	325,000.000													65.000	325,000.000
4	stairs	t	5,000.000	6.500	6.500	32,500.000													6.500	32,500.000
5	roof	m2	70.000	1,100.000	1,100.000	77,000.000													1,100.000	77,000.000
6	roof frame	t	2,800.000	10.500	10.500	29,400.000													10.500	29,400.000
7	other costs (20% of labor costs)	RMB	1.000	223.200	223.200	223.200													223.200	223.200
8	crane 25t	nos･day	1,013.570	5.100	5.100	5,169.207		10.325	6,090.558		1.920	320.697		6.064	1,679.517		110.800	6,681.351	134.209	19,941.330
9	other small equipment cost	RMB																		
10	basic price	RMB				560,408.407			17,735.040			3,795.033			21,915.200		14,474.000	14,474.000		618,327.680
11	direct cost	RMB				560,408.407			23,098.946			3,795.033			31,566.598			28,422.818		647,291.803
12	other direct cost	%		6.450		36,146.342	5.630		998.483	6.450		244.780	18.220		3,992.949	18.220		2,637.163		44,019.717
13	site expense	%		12.820		71,844.358	6.870		1,218.397	12.820		486.523	16.660		3,651.072	16.660		2,411.368		79,611.718
14	indirect cost	%		4.870		32,551.037	2.540		506.779	4.870		220.433	4.320		1,276.958	4.320		843.373		35,398.580
direct construction cost + indirect cost		RMB				700,950.144			25,822.605			4,746.769			40,487.577			34,314.722		806,321.818
item of direct construction cost		RMB		labor cost 4,629		material cost 622,720		equipment cost 19,941		direct construction cost 770,923										

quantity　deck plate　1000 m2

the area of asphalt　1600m2＊0.03m=　48.000 m3

deck plate concrete　1000m2＊0.15m=　150.000 m3

base course asphalt stabilize　1600 m2

Table F-6-63

bicycle parking place Type-A（floor area:1000m2)

item	construction work			deck plate, roof, column			asphalt pavement			deck plate concrete			bed course asphalt stabilize			guardrail			Total	
	content of work			fabrication, erection																
	unit of work			1,000 m2			100 m3			100 m3			1,000 m2			100 m				
	quantity of work			0.300 *1000m2			0.120 *100m3			0.450 *100m3			0.400 *1000m2			0.800 ×100m				
	reference																			
	work item	unit	unit-price (RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	unit of work	quantity of work	sub.total cost(RMB)	quantity	cost(RMB)
1	worker	man-day	18.000	62.000	18.600	334.800		4.584	82.512		1.413	25.434		12.120	218.160		61.840	1,113.120	98.557	1,774.026
2	steel column	t	5,000.000	18.000	5.400	27,000.000		22.790	4,169.585		20.449	1,016.867		85.804	7,253.610		272.597	9,757.614	407.040	49,197.676
3	floor （deck plate）	t	5,000.000	65.000	19.500	97,500.000													19.500	97,500.000
4	stairs	t	5,000.000	6.500	1.950	9,750.000													1.950	9,750.000
5	roof	m2	70.000	1,100.000	330.000	23,100.000													330.000	23,100.000
6	roof frame	t	2,800.000	10.500	3.150	8,820.000													3.150	8,820.000
7	costs)	RMB	1.000	66.960	20.088	20.088													20.088	20.088
8	crane 25t	day	1,013.570	5.100	1.530	1,550.762		2.581	1,522.640		0.576	96.209		1.516	419.879		55.400	3,340.676	61.603	6,930.165
9	other small equipment cost	RMB																		
10	basic price	RMB				168,122.522			4,433.760			1,138.510			5,478.800			7,237.000		186,410.592
11	direct cost	RMB				168,075.650			5,774.737			1,138.510			7,891.650			14,211.409		197,091.955
12	other direct cost	%		6.450		10,840.879	5.630		249.621	6.450		73.434	18.220		998.237	18.220		1,318.581		13,480.752
13	site expense	%		12.820		21,547.298	6.870		304.599	12.820		145.957	16.660		912.768	16.660		1,205.684		24,116.306
14	indirect cost	%		4.870		9,762.588	2.540		126.695	4.870		66.130	4.320		319.240	4.320		421.687		10,696.340
cost		RMB				210,226.415			6,455.652			1,424.031			10,121.895			17,157.361		245,385.353

item of direct construction cost	RMB	labor cost	material cost	equipment cost	direct construction cost
		1,774	188,387	6,930	234,689