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1．要請書

VT:1

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Peace Independence Democracy Unity Prosperity

MINISTRY
OF
COMMUNICATION, TRANSPORT, POST AND CONSTRUCTION

APPLICATION FOR JAPANESE GRANT AID

FOR

VIENTIANE ROAD IMPROVEMENT PROJECT

(FROM WATTAY AIRPORT TO THE FRIENDSHIP BRIDGE)

JUNE 2002

VT:14148-3

THE APPLICATION FORM FOR JAPANESE GRANT AID

1. Date of entry: May 2002

2. Applicant: The Government of the Lao People's Democratic Republic

3. Project title: Vientiane Road Improvement Project
(From Wattay Airport to the Friendship Bridge)

4. Sector: Road Sector

5. Project type: Facilities Construction

6. Target site: (province) Vientiane Municipality
(city/town) Sikhottabong, Chanthabouli, Sisattanak and Hatxayfong Districts
The project site is shown on Appendix-1.

7. Requested amount: Japanese Yen 2,980,000,000-

8. Desired fiscal year of implementation: Survey (Basic Design) FY2002
(Detailed Design) FY2003
Implementation FY2004-2005

9. Implementing agency:
Ministry of Communication, Transport, Post and Construction
Person in charge: (full name) Mr. Sommad PHOLSENA
(affiliation) Director General, Department of Roads
Address: Lane-Xang Avenue, Vientiane, Lao PDR
Telephone No. (856-21) 412741
Facsimile No. (856-21) 414132

VT:14148-4

10. Outline of the Implementing Agency

The Ministry of Communication, Transport, Post and Construction (MCTPC) is the agency responsible for overall planning, organization and management of communication, transport, post and construction matters at the National level including urban infrastructure planning and development.

The Department of Roads (DOR) of MCTPC is responsible for planning, development, construction, maintenance and repairs of roads and bridges all over the country.

The Organization chart of MCTPC including DOR is shown on Appendix-2.

The number of MCTPC staff is 760 (not including staff working at Departments of Communication, Transport, Post and Construction in provinces (DCTPCs), state enterprises and so on).

The number of DOR staff is 161 as classified below (not including staff working at DCTPCs, state enterprises and so on).

Doctor's Degree	1
Master's Degree	5
Bachelor's Degree	53
High-level Workers	67
Middle-level Workers	21
Primary-level Workers	14
Total	161

The budgets of the State, MCTPC and DOR are as follow.

Unit: Million Kip

Year	2000-2001	2002-2002
State	2,005,260	2,273,100
Local	805,260	1,017,000
Foreign	1,200,000	1,256,100
MCTPC	722,010	385,410
Local	71,921	76,000
Foreign	650,089	309,410
DOR	617,542	313,404
Local	66,664	73,222
Foreign	550,878	240,182

Note: US$1 is around 9,500Kip in 2002.

11. Background of the Request for the Japanese Grant Aid

(1) Current situation of the Sector

Roads are the dominant mode of transportation in the Lao PDR. 92% of cargo and 95% of passengers are carried by roads. Therefore road improvement is absolutely necessary for the social economic development of the Lao PDR.

Particularly road improvement in the capital of the Lao PDR, Vientiane Municipality, is important, because Vientiane Municipality plays a central role for the social economic development of the Lao PDR.

MCTPC planned six road improvement projects in Vientiane Municipality. Of these six projects, four projects have already been completed and one project is being implemented. The remaining road improvement project is the improvement of the road from Wattay Airport to the Friendship Bridge. This is called Vientiane No.1 Road (including 3km of the branch stretch in the city center, Vientiane No.1A Road).

Vientiane No.1 Road is a part of the Asian Highway No.12. This road, by means of the Friendship Bridge, connects Thailand with the northern region (through NR.13N) and the southern region (through NR.13S) of the Lao PDR.

The Friendship Bridge and Wattay Airport are the two main gateways to the Lao PDR. 60% of visitors to the Lao PDR use the Friendship Bridge and 12% use Wattay Airport. Vientiane No.1 Road is a very important international road to connect these gateways and the center of Vientiane Municipality.

Along Vientiane No.1 Road, about 78,000 people live and there are many facilities such as factories, schools, historical buildings and so on. This road is also important for the daily lives of the residents and for the access to those facilities along the road.

The total traffic volume of Vientiane No.1 Road from 07:00AM to 19:00PM is about 20,000 on average. The volume excluding bicycles and motorbikes is about 9,000 on average. This volume is quite high in comparison with other main roads in Vientiane Municipality.

However the present condition of Vientiane No.1 Road is poor and this prevents vehicles from moving safely and smoothly on this road. This poor condition causes vibration originating from moving vehicles and, as a result, historical buildings along the road are in danger of collapsing. In combination with the poor road condition, the mixture of high and low speed traffic on the road has resulted in many traffic accidents. In addition, flooding has occurred on and along the road in the city center every rainy season due to the insufficient drainage system.

The present condition of Vientiane No.1 Road is shown on Appendix-3.

(2) Problems to be solved in the Sector

For the social economic development of the Lao PDR, the improvement of roads is absolutely necessary, particularly in the capital, Vientiane Municipality.

However, the most important arterial road in Vientiane Municipality, Vientiane No.1 Road, has not been improved yet and has the following problems to be solved.

a. The Poor Condition

The present condition of Vientiane No.1 Road is poor, because only minor maintenance such as resealing has been carried out since this road was initially paved by DBST (Double Bituminous Surface Treatment). The standard deviation of the heights of the road, which shows the smoothness of the surface of the road, is 4.9mm on average. This is quite high in comparison with other main roads in Vientiane Municipality. It is said in general that highways must be improved when the standard deviation of the heights becomes higher than 3.5mm and principal roads must be improved when the standard deviation becomes 4.5-5.0mm. Therefore Vientiane No.1 Road must be improved immediately (The detailed data is shown on Appendix-4.).

This poor condition has come from the deterioration of the basement. Therefore it is necessary to improve not only the surface but also the basement.

The improvement of the Vientiane No.1 Road will contribute to smooth and safe traffic on the road. In addition, this improvement will reduce vibration originating from moving vehicles and contribute to the preservation of historical buildings such as temples along the road in the city center.

b. High Traffic Accidents

On Vientiane No.1 Road, high and low speed traffic is not separated. This situation, in combination with the poor condition of the road, has resulted in many traffic accidents.

Low speed traffic must be separated from high speed traffic by installing a lane for bicycles, motorbikes and Tuk Tuks on the road in order to reduce traffic accidents.

c. Flooding in the City Center

Flooding has occurred on and along Vientiane No.1 Road in the center of Vientiane Municipality every rainy season due to the insufficient drainage system.

The drainage system along this road in the city center must be improved to prevent the flooding.

The flooding situation is shown on Appendx-5.

d. Lack of fund

Under the present severe financial constraints, there have not been enough funds available for MCTPC to improve Vientiane No.1 Road.

(3) Necessity and importance of improvement in the Sector which lead to the formulation of the Project

For the social economic development of the Lao PDR, road improvement is absolutely necessary. This is particularly important in Vientiane Municipality because this city is the capital of the Lao PDR and plays a central role for the social economic development of the Lao PDR.

JICA Local Development Survey on Existing Road and Drainage Condition in Vientiane Municipality was implemented in 2001-2002. This survey compared main roads in Vientiane Municipality which have not been improved yet, taking into account traffic volume on each road, number of residents and distribution of facilities along each road and so on, and concluded that the highest priority project is the improvement of Vientiane No.1 Road.

(4) Relation between the Sector and the Project

Road improvement in Vientiane Municipality will contribute to the social economic development not only in Vientiane Municipality but also all over the country. Therefore the improvement of Vientiane No.1 Road, which is the highest priority project in Vientiane Municipality, is one of the highest priority projects in the road sector of the Lao PDR.

(5) Reasons why Japan's Grant Aid is requested for the particular Project.

The Government of Japan has been well acquainted with the present road situation in the Lao PDR and has greatly contributed to the improvement of national roads under the large financial assistance and advanced technology. Moreover, JICA implemented Local Development Survey on Existing Road and Drainage Condition in Vientiane Municipality and concluded that the improvement of Vientiane No.1 Road is the highest priority project in Vientiane Municipality.

Therefore, the Government of Lao PDR has decided to apply to Japan for the implementation of this important project preferably under the grant aid of Japan.

12. Relation with the government's development plans

(1) Relation with the government's national development plan

The Lao Government has formulated the Socio Economic Development Strategy

for 2020 and 2010 and the Five Year Socio-Economic Plan (2001-2005) in February of 2002.

In the strategy for 2020 and 2010, it is stated that basic infrastructure such as cross-country highways should be developed.

In the Five Year Socio-Economic Plan (2001-2005), it is stated that bituminous paved roads from Vientiane Municipality to other provincial municipalities will be completed by 2005.

Vientiane No.1 Road connects Thailand and the Lao PDR and is one of the most important cross-country highways in the Lao PDR. This road also forms a part of road network throughout Vientiane Municipality and provincial municipalities together with NR. 13 and so on.

(2) Relation with the sector comprehensive/overall program

MCTPC has formulated the Communication, Transport, Post and Construction Development Plan (from 2001 to 2005, 2010 and 2020) in July of 2001. In this plan the improvement of Vientiane No.1 Road is to be completed by 2005.

13. Objectives

(1) Objectives and purpose of the project

Main objectives are as follow.

- To improve one of the most important international roads in the Lao PDR, Vientiane No.1 Road, which connects two main gateways to the Lao PDR, the Friendship Bridge and Wattay Airport, and the central, northern and southern regions together with NR.13N and NR.13S. This road also forms a part of the Asian Highway No.12 together with NR.13N and connects with NR.13S that forms the Asian Highway No.11.
- To secure daily trips of the residents along the road and to secure access to the facilities along the road

To achieve these objectives, the following purposes of this project must be accomplished.

- To contribute to safe and smooth traffic on the road by improving it. The improvement of the road will also contribute to the preservation of historical buildings along the road in the city center by reducing vibration originating from moving vehicles.
- To reduce traffic accidents by installing a lane on the road in order to separate high and low speed traffic
- To prevent flooding on and along the road by improving the drainage system

(2) Overall goal/medium and long-term objectives:

a. Medium-term objectives

- To promote international traffic such as trade, tourism and so on
- To promote internal traffic and to improve the standard of living of the residents along the road
- To contribute to the social economic development in Vientiane Municipality

b. Long-term objectives

- To contribute to the social economic development all over the Lao PDR
- To contribute to poverty reduction of the Lao PDR

14. Outline of the project and request

(1) a. In the case of facilities

This project is the improvement of an existing road, Vientiane No.1 Road (including 3km of the branch stretch in the city center, Vientiane No.1A Road), extending from Sikhay intersection near Wattay Airport to the Friendship Bridge through the center of Vientiane Municipality and Chinaimo intersection. The total length reaches around 27km (including around 3km of Vientiane No.1A Road).

This road is expected to be improved by repaving with the installation of signals and other incidental facilities (the drawings are shown on Appendix-6.).

The pavement types are as follow.

(a) Reinforced Concrete covered with Asphalt Concrete will be used for the section of Vientiane No.1A Road and for one section of Vientiane No.1 Road parallel to Vientiane No.1A Road. The total length is about 6km.

(b) Fundamentally, Asphalt Concrete will be used for the other sections. However, Reinforced Concrete covered with Asphalt Concrete can be considered as the pavement of these sections according to the situation of the existing pavement, the soil and so on.

There are many buildings along Vientiane No.1 and No.1A Road. These include historically important buildings, houses, shops, factories, schools and so on. There is fear of these buildings being damaged by vibration originating from the improvement work. It is important to reduce strong vibration particularly originating from the breaking of the existing pavement. Therefore, before the improvement work, the condition of the existing pavement should be checked and, taking into account the results of the condition survey, the existing pavement should be used as the base of the new pavement without breaking it, if possible.

In addition, the improvement of principal drainage laterals along the road in the city center is included in this project (The principal drainage laterals to be improved are shown on Appendix-7.).

Around one and half years are required to complete this project.

b. Methods to operate, manage and maintain the facilities and equipment, expected number of persons needed, together with their technical levels and the prospect of securing the necessary budget:

MCTPC is responsible for the operation, management and maintenance of this road after the completion of this project.

c. Financial sources for management and maintenance after completion of the requested project:

The financial sources for the management and maintenance of this road will be borne by the Government of the Lao PDR.

(2) Breakdown of total amount of the facilities and equipment with supporting data

Description		Amount
Preparation work	JP¥	100,000,000
Construction work	JP¥	2,152,000.000
Incidental work	JP¥	499,000,000
Engineering fees	JP¥	229,000,000
Total	JP¥	2,980,000,000

Note: Including improvement cost of drainage laterals in the city center

(3) Additional information

a. Existing facilities

Yes (Please refer to Appendix-3)

b. Project site preparation:

Land: Almost all the land for this project is already secured by the Government of the Lao PDR. Some obstructions such as houses may be removed under the responsibility of the Government of the Lao PDR.

i) Current situations of the project site, such as leveling, drainage, availability of power, water supply, telephone, etc.

The project site is located in the urbanized flat area. Therefore utilities such as

power, water supply, telephone and so on are available. There is a drainage system along the project road in the center of Vientiane Municipality. This drainage system is functional but insufficient. Therefore the drainage system will be improved in this project.

ii) Data on natural conditions

MCTPC carried out a soil investigation and a topographic survey in 1996 and 1997 in the course of the past six road projects in Vientiane Municipality.

iii) Security situation

No security problem around the project site has been reported.

c. Related Grant Aid cooperation in the past:

i) Fiscal year: 1987-1988
Title: Improvement of Vientiane River Port (Lak Si Port)
Amount: Yen 902 million
Target area: Vientiane River Port (Lak Si Port) by Vientiane No.1 Road
Assessment on level of utilization of the project: A (Good)

ii) Fiscal year: 1995 – 1998
Title: Improvement of Vientiane International Airport
Amount: Yen 4,464 million
Target area: Vientiane International Airport (Wattay Airport)
Assessment on level of utilization of the project: A (Good)

15. Benefit and effects of the project:

(1) Area that will benefit from the project

Around 150k ㎡ of urbanized area including Vientiane No.1 Road will directly benefit from this project.

(2) Population that will benefit

Directly: Around 280,000 people living in the urbanized area of Vientiane Municipality will directly benefit from the improvement of Vientiane No.1 Road.

Indirectly: Around 296,000 people living in Vientiane Municipality except for the urbanized area will indirectly benefit from this project. In addition, around 4.6 million people in the whole country except for Vientiane Municipality will also indirectly benefit from the social economic development and poverty

reduction all over the Lao PDR that are the long-term objectives of this project.

(3) Expected social and economic effects

- To promote international traffic such as trade, tourism and so on
- To promote internal traffic and to improve the standard of living of the residents along the road
- To contribute to the social economic development in Vientiane Municipality
- To contribute to the social economic development all over the Lao PDR
- To contribute to poverty reduction of the Lao PDR

16. Relation with technical cooperation, etc.

(1) Feasibility study:

Already effected

JICA Local Development Survey on Existing Road and Drainage Condition was implemented during the period of August 2001 – March 2002.

This survey compared main roads in Vientiane Municipality which have not been improved yet, taking into account traffic volume on each road, number of residents and distribution of facilities along each road and so on, and concluded that the highest priority project is the improvement of Vientiane No.1 Road.

In this survey, typical cross sections for Vientiane No.1 Road were drawn, principal drainage laterals along the road to be improved were identified and thus the cost of this project was estimated.

(2) Technical cooperation

Forms of assistance we require

- Project-type technical experts: 0 person
- Long-term experts: 0 person
- Short-term experts: 0 person
- Senior volunteers: 0 person
- JOCV: 0 person
- Acceptance of trainees: 0 person

The technical cooperation is not underway.

17. Request to other donors for the same project

None

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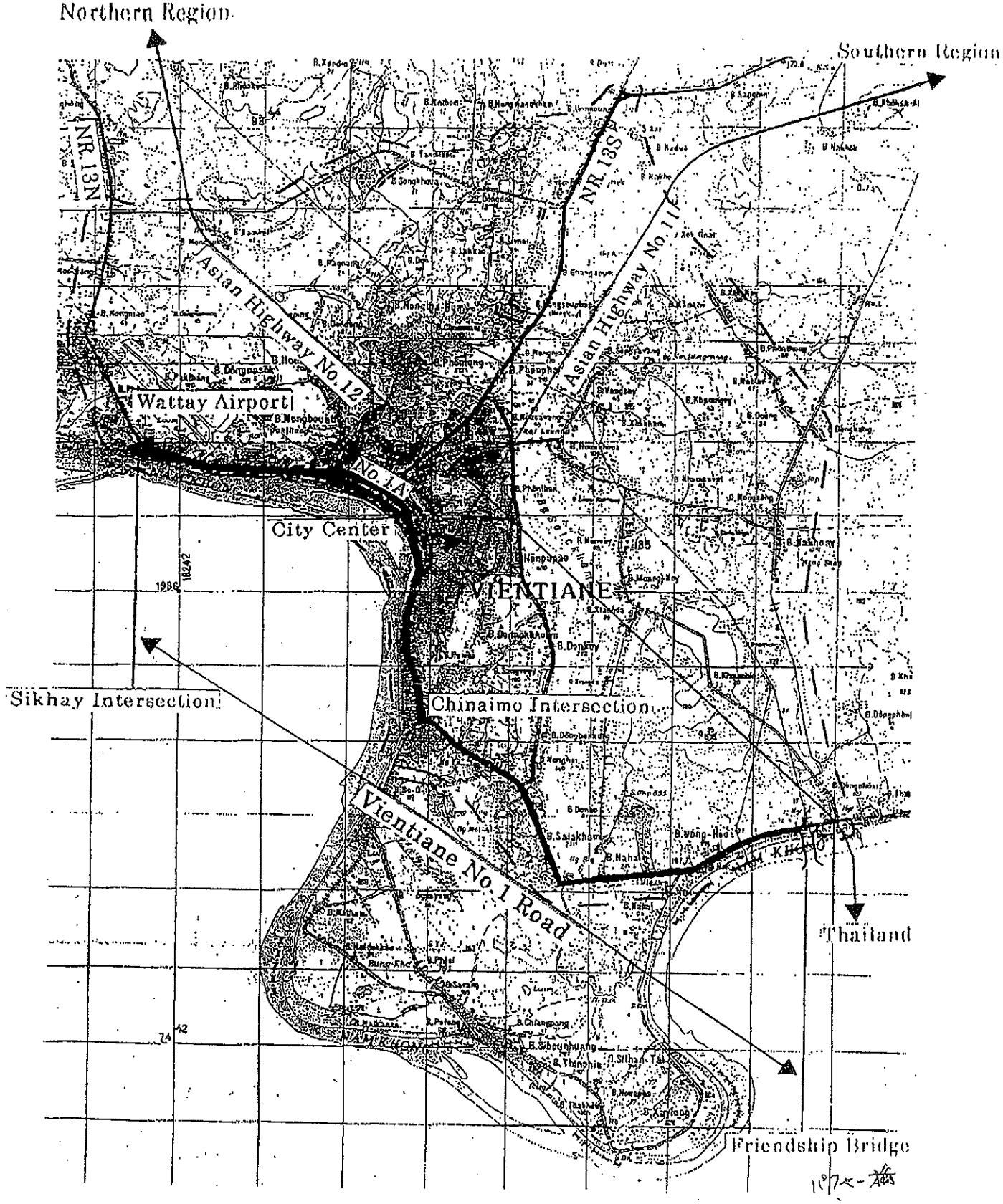
18. Aid by third countries or international organizations in the same or related fields.

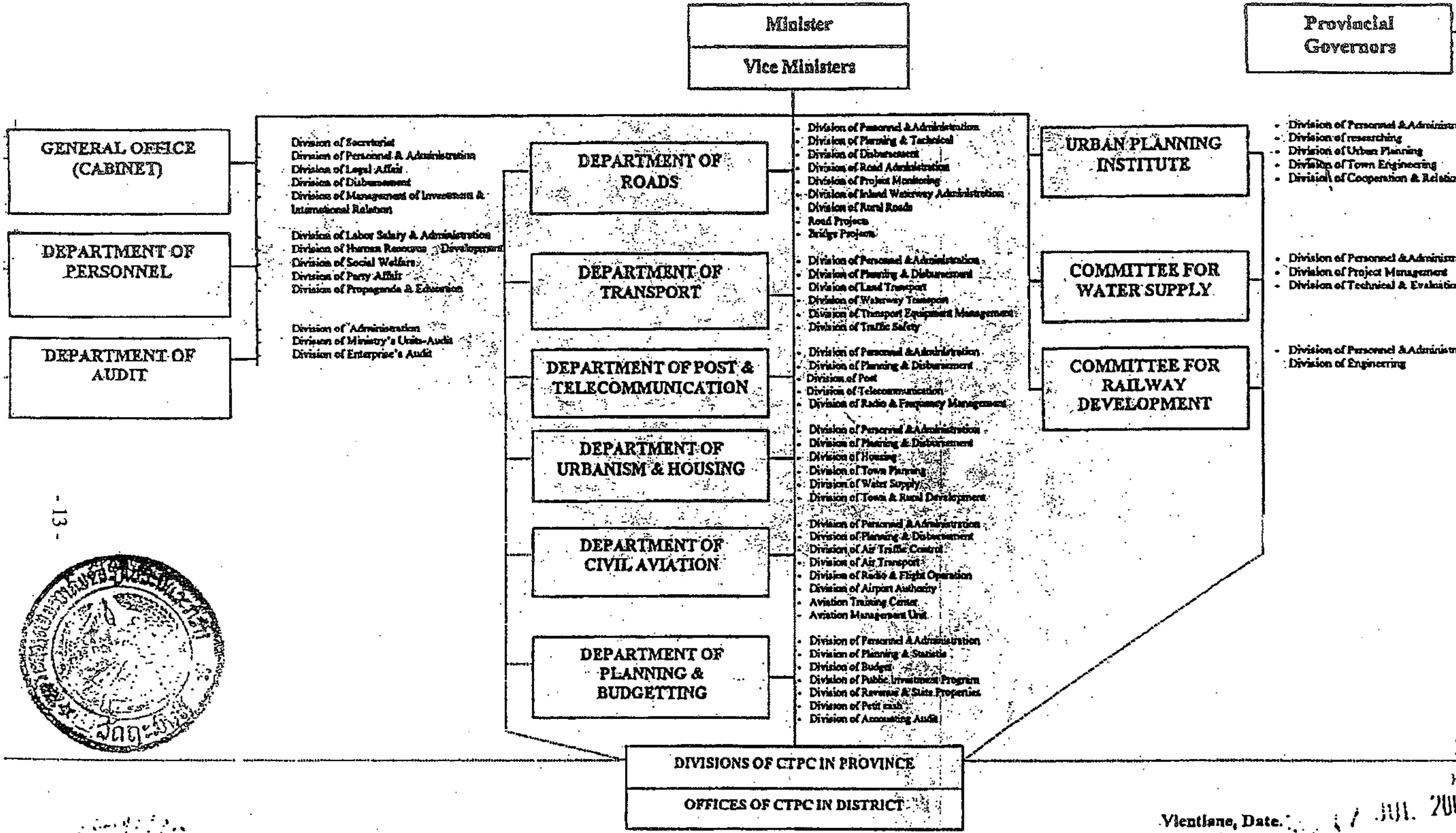
Name of Donor	Period	Type	Amount (Million)	Description (Details)	Relationship with the present request
ADB	1989 to 1994	Loan	US$23.3	Improvement of NR.13N Vientiane Municipality - Vangvieng	National Road connecting with Vientiane No.1 Road
SIDA	1993 to 1996	Grant	US$22.3	Improvement of NR.13S Vientiane Municipality – Pakkading	National Road connecting with Vientiane No.1 Road
ADB	1997	Loan		Road Improvement in Vientiane Municipality Airport – Phonsaath	Urban road in Vientiane Municipality
ADB	1998	Loan		Road Improvement in Vientiane Municipality Thongkhankham - Savang	Urban road in Vientiane Municipality
ADB	1997	Loan		Road Improvement in Vientiane Municipality Ban Phonsavan	Urban road in Vientiane Municipality
ADB	1997	Loan		Road Improvement in Vientiane Municipality Saphangmo	Urban road in Vientiane Municipality
Thai	2000	Grant		Construction of Lao – Thai Friendship Road	Urban road in Vientiane Municipality

19. Other information with special remark (whether or not privatization policy is effected. If yes, indicate the relationship with the requested project.)

None



Appendix-1 Project Site Map


Minister
Vice Ministers
Provincial Governors
GENERAL OFFICE (CABINET)
Division of Secretariat
Division of Personnel & Administration
Division of Legal Affair
Division of Disbursement
Division of Management of Investment & International Relation
DEPARTMENT OF PERSONNEL
Division of Labor Salary & Administration
Division of Human Resources Development
Division of Social Welfare
Division of Party Affair
Division of Propaganda & Education
DEPARTMENT OF AUDIT
Division of Administration
Division of Ministry's Units-Audit
Division of Enterprise's Audit
DEPARTMENT OF ROADS
Division of Personnel & Administration
Division of Planning & Technical
Division of Disbursement
Division of Road Administration
Division of Project Monitoring
Division of Inland Waterway Administration
Division of Rural Roads
Road Projects
Bridge Projects
DEPARTMENT OF TRANSPORT
Division of Personnel & Administration
Division of Planning & Disbursement
Division of Land Transport
Division of Waterway Transport
Division of Transport Equipment Management
Division of Traffic Safety
DEPARTMENT OF POST & TELECOMMUNICATION
Division of Personnel & Administration
Division of Planning & Disbursement
Division of Post
Division of Telecommunication
Division of Radio & Frequency Management
DEPARTMENT OF URBANISM & HOUSING
Division of Personnel & Administration
Division of Planning & Disbursement
Division of Housing
Division of Town Planning
Division of Water Supply
Division of Town & Rural Development
DEPARTMENT OF CIVIL AVIATION
Division of Personnel & Administration
Division of Planning & Disbursement
Division of Air Traffic Control
Division of Air Transport
Division of Radio & Flight Operation
Division of Airport Authority
Aviation Training Center
Aviation Management Unit
DEPARTMENT OF PLANNING & BUDGETTING
Division of Personnel & Administration
Division of Planning & Statistic
Division of Budget
Division of Public Investment Program
Division of Revenue & State Properties
Division of Petit cash
Division of Accounting Audit
URBAN PLANNING INSTITUTE
Division of Personnel & Administration
Division of researching
Division of Urban Planning
Division of Town Engineering
Division of Cooperation & Relation
COMMITTEE FOR WATER SUPPLY
Division of Personnel & Administration
Division of Project Management
Division of Technical & Evaluation
COMMITTEE FOR RAILWAY DEVELOPMENT
Division of Personnel & Administration
Division of Engineering
DIVISIONS OF CTPC IN PROVINCE
OFFICES OF CTPC IN DISTRICT

Minister, Ministry of communication, Transport, Post and Construction

Phao BOUNNAPHOL

Vientiane, Date. 17 JUL 2000

Director General, Department of Personnel

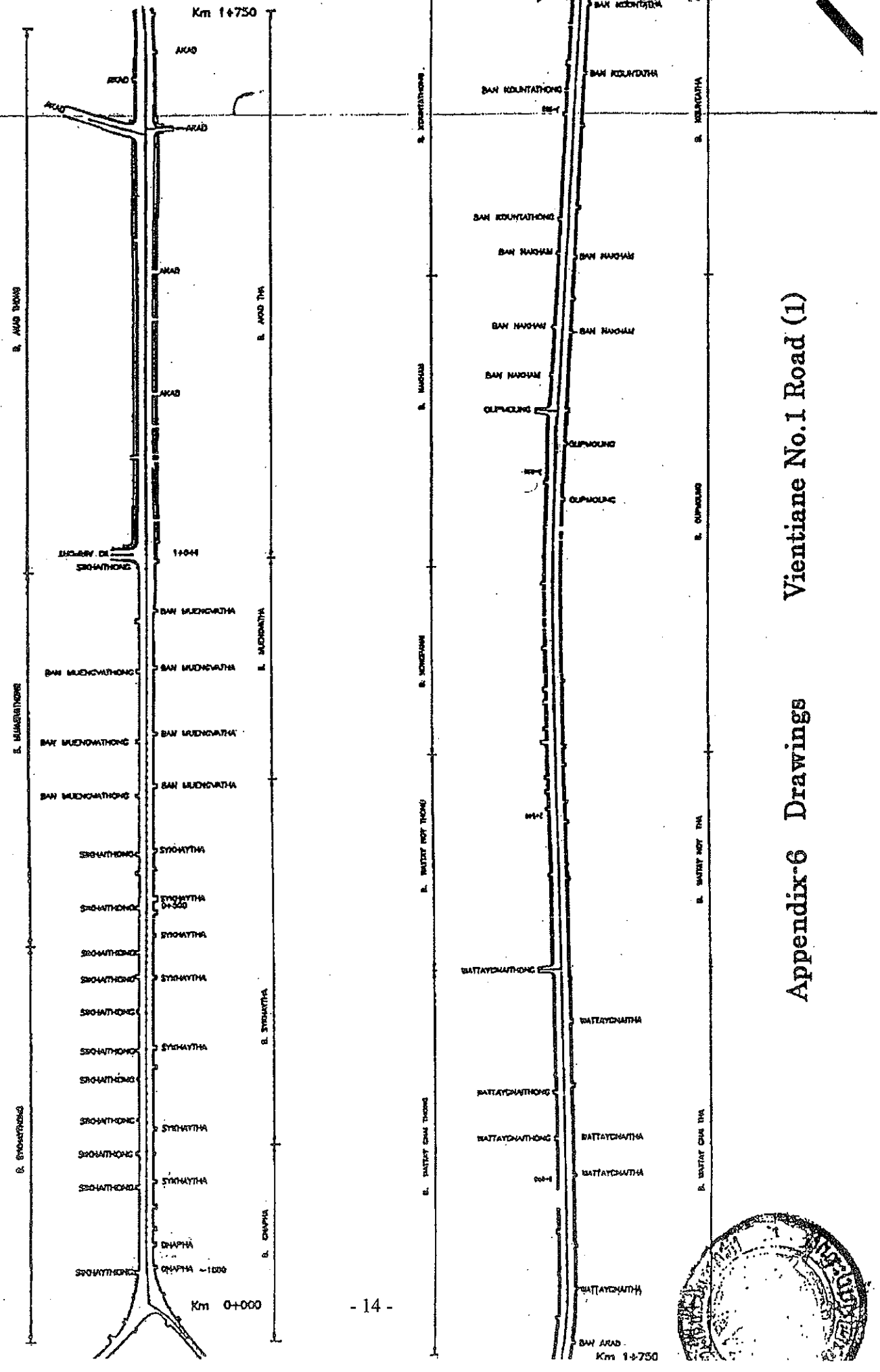
Somboun VONGPHAKDY

Appendix-2 Organization Chart of MCTPC

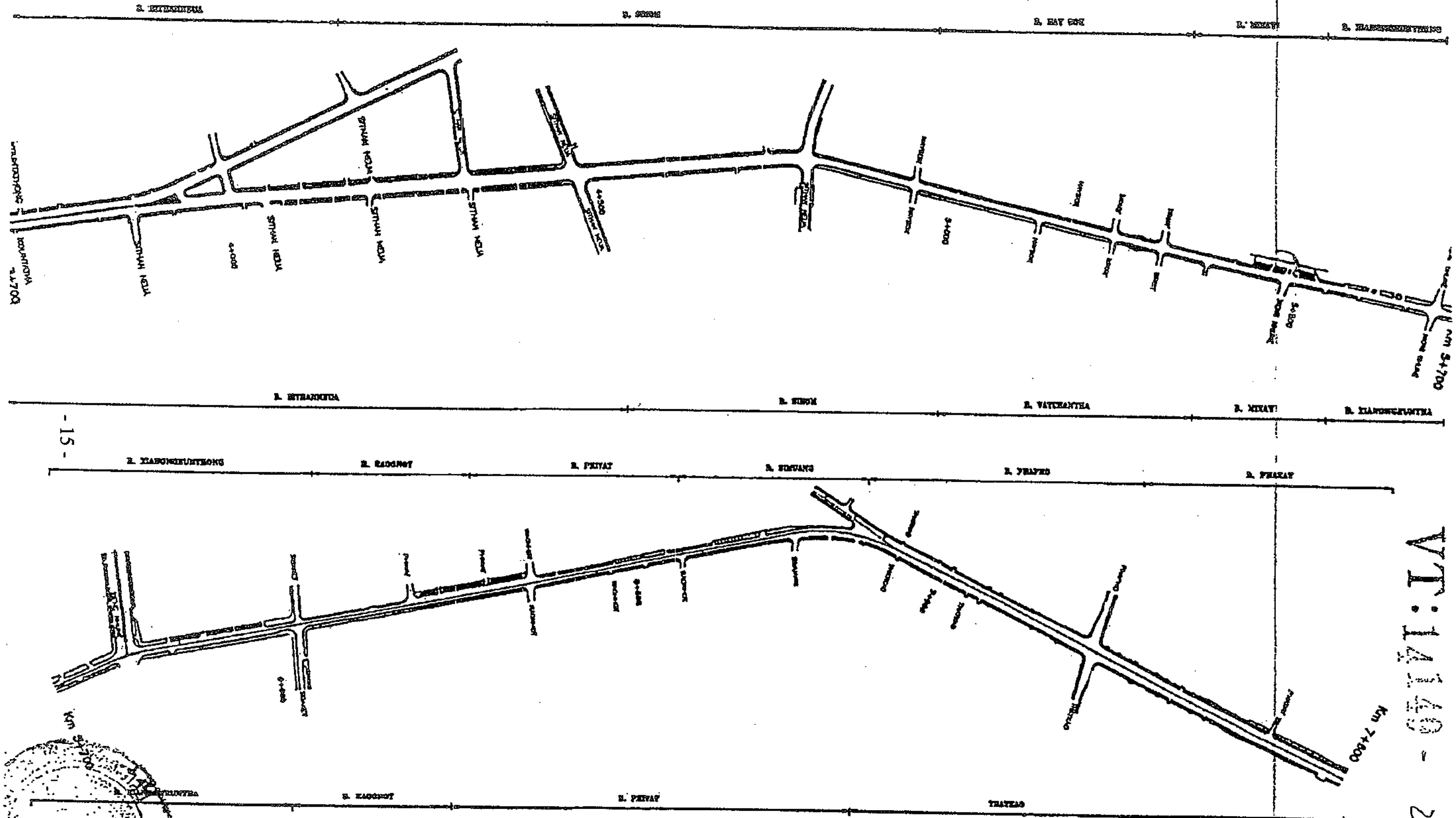
Appendix-6 Drawings

Vientiane No.1 Road (1)

ROAD No. 1



ROAD No. 1

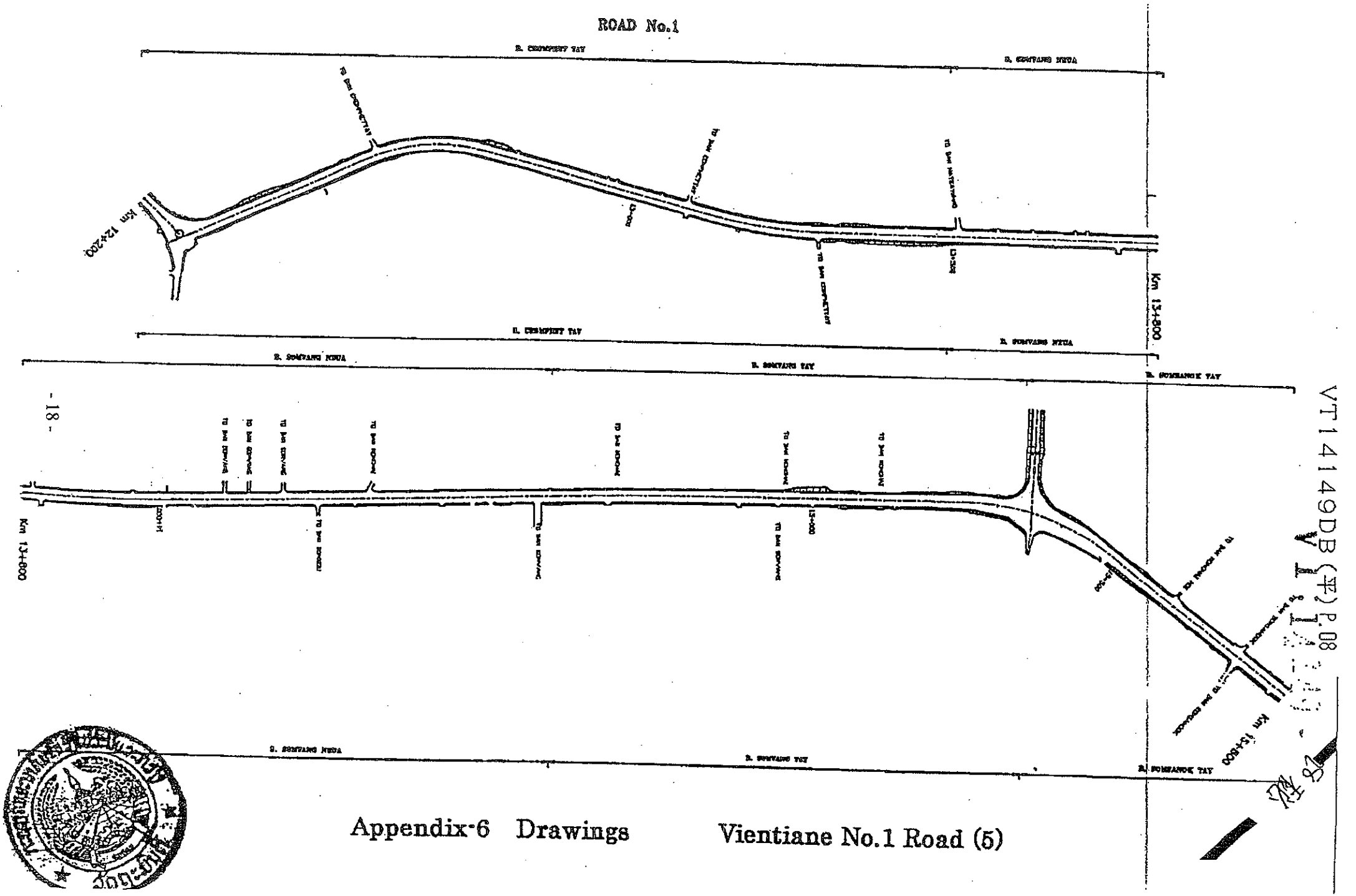


Appendix-6 Drawings Vientiane No.1 Road (2)

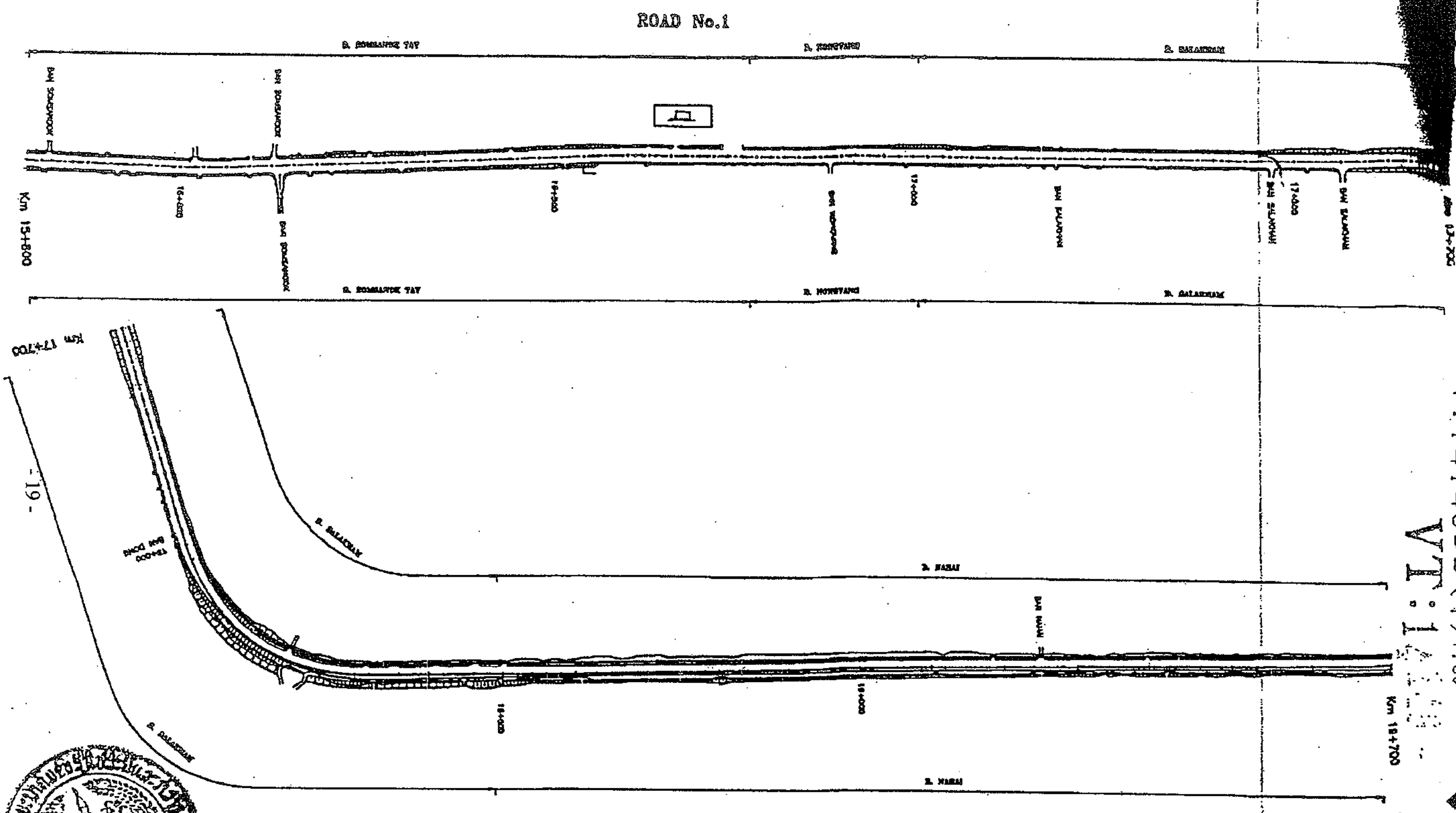
Appendix-6 Drawings Vientiane No.1 Road (3)

ROAD No.1

Appendix-6 Drawings Vientiane No.1 Road (4)



Appendix-6 Drawings Vientiane No.1 Road (5)



Appendix-6 Drawings Vientiane No.1 Road (6)

ROAD No.1

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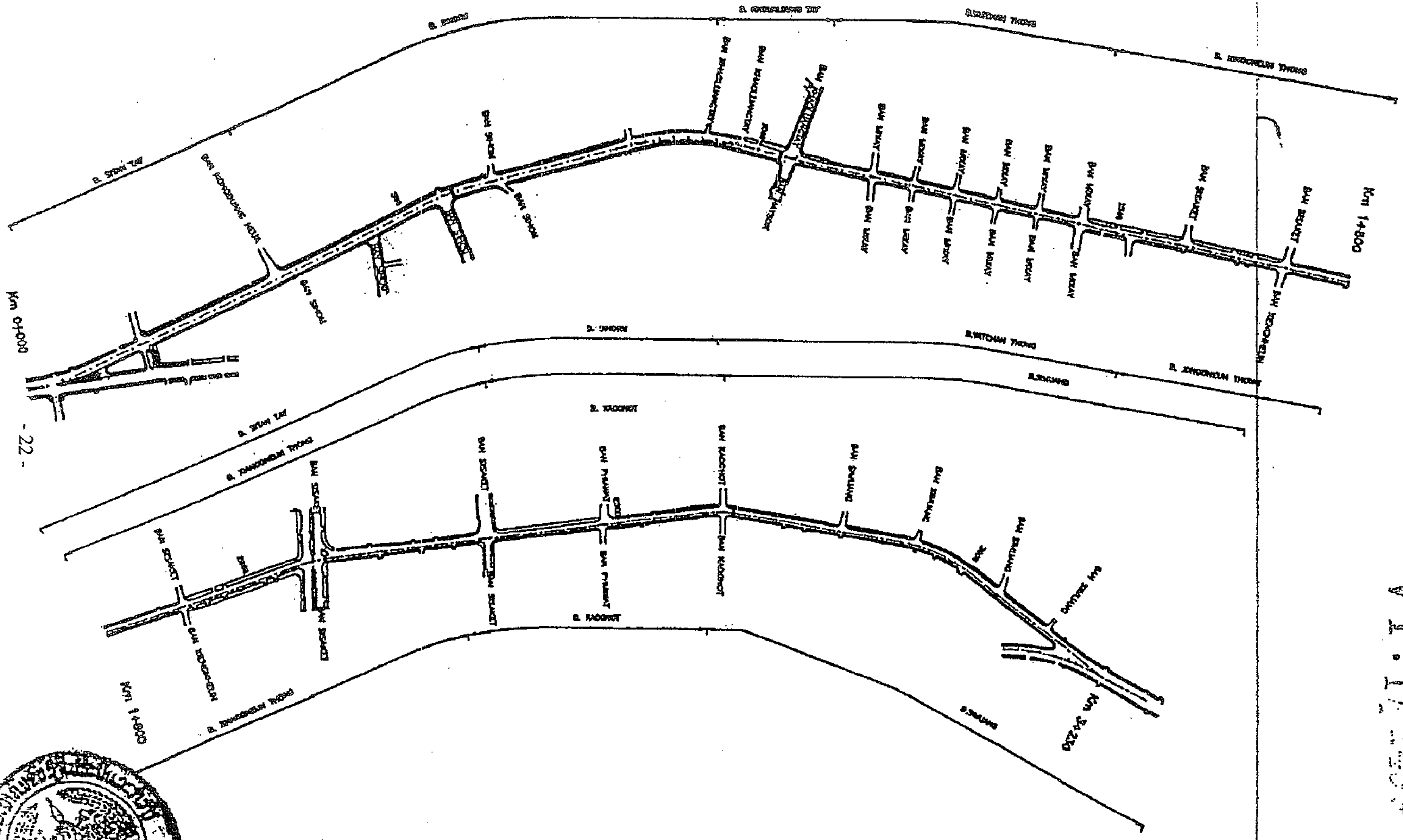
Appendix-6 Drawings Vientiane No.1 Road (7)

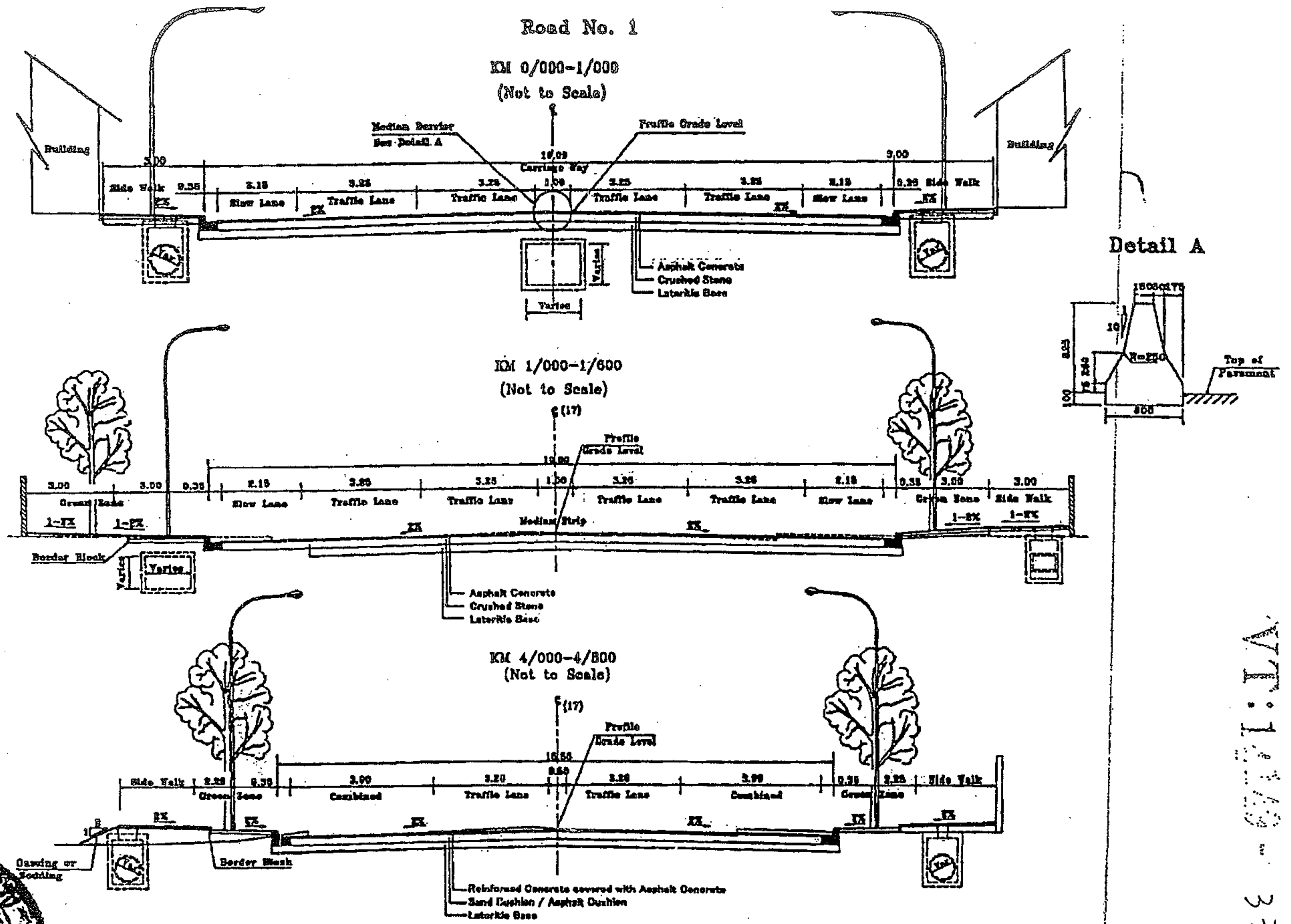
ROAD No.1

Appendix-6 Drawings Vientiane No.1 Road (8)

ROAD No.1A

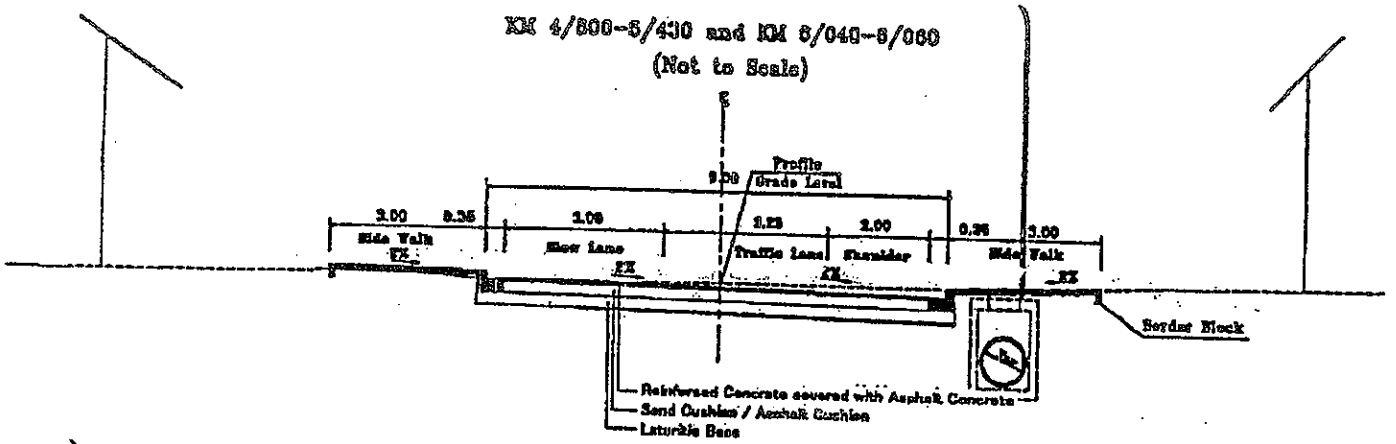


Appendix-6 Drawings Vientiane No.1A Road

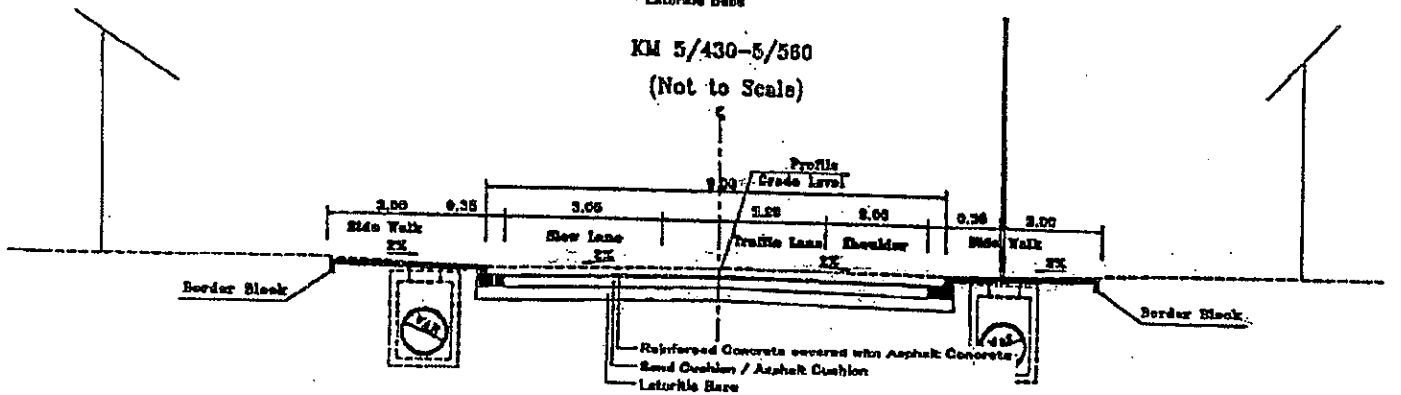


Appendix-6 Drawings (Typical Cross-Sections) Vientiane No.1 Road (1)

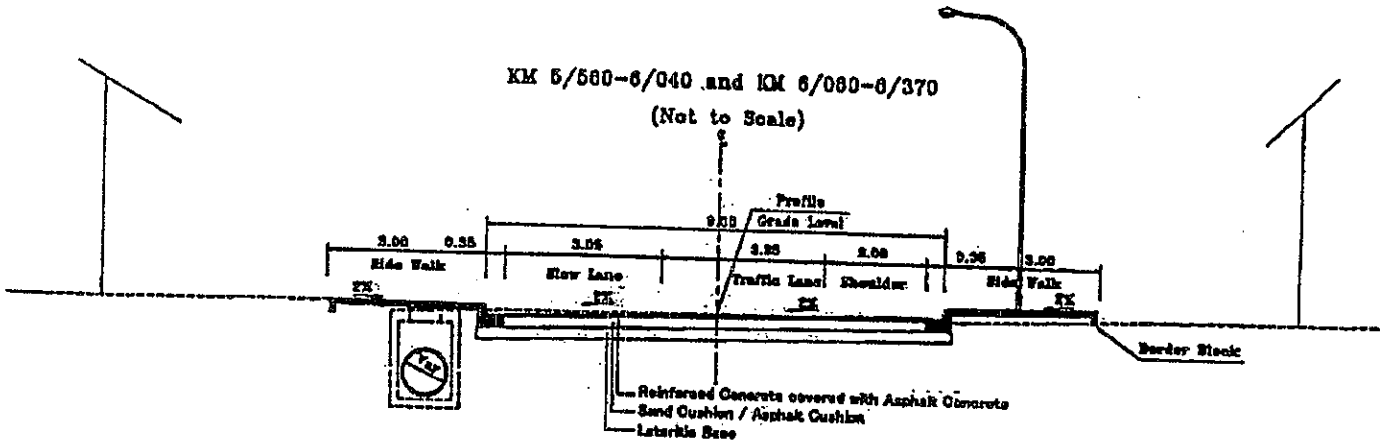
KM 4/800-5/430 and KM 6/040-6/060
(Not to Scale)



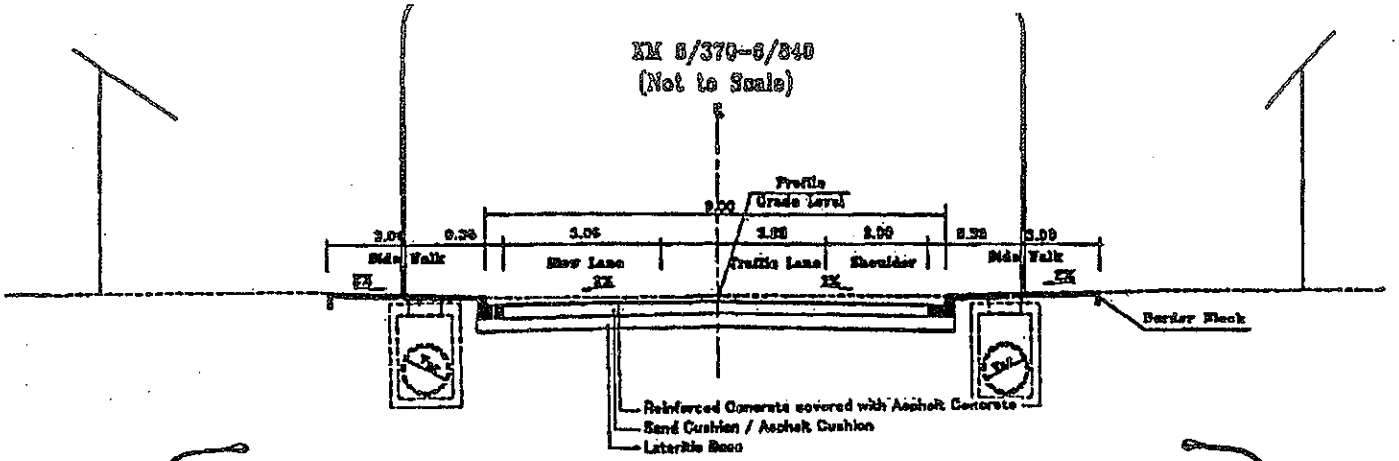
KM 5/430-5/560
(Not to Scale)

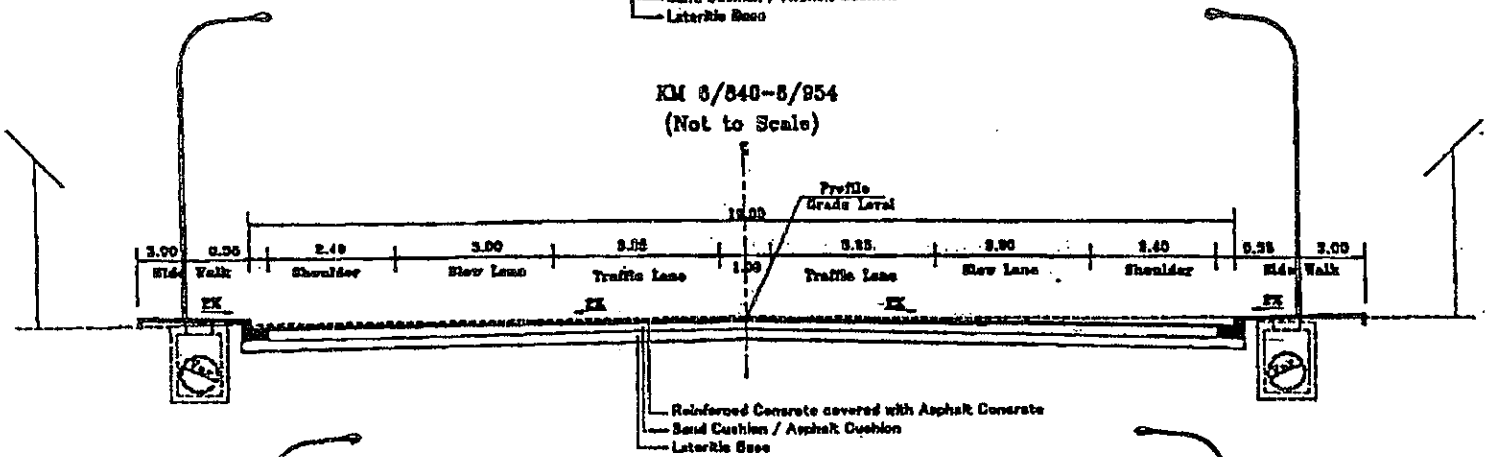


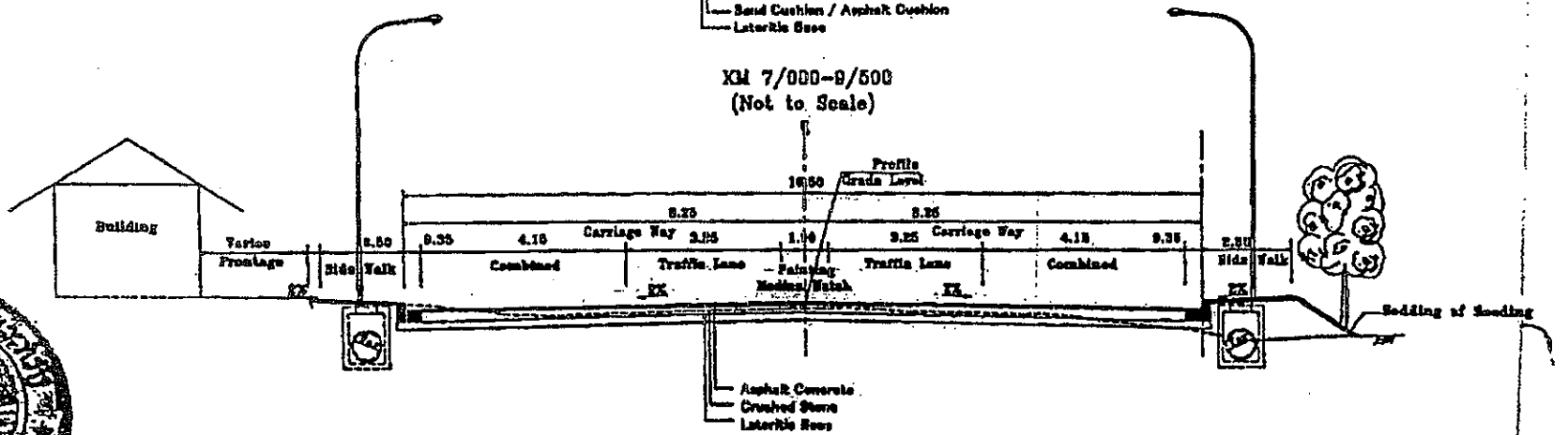
KM 5/560-6/040 and KM 6/060-6/370
(Not to Scale)



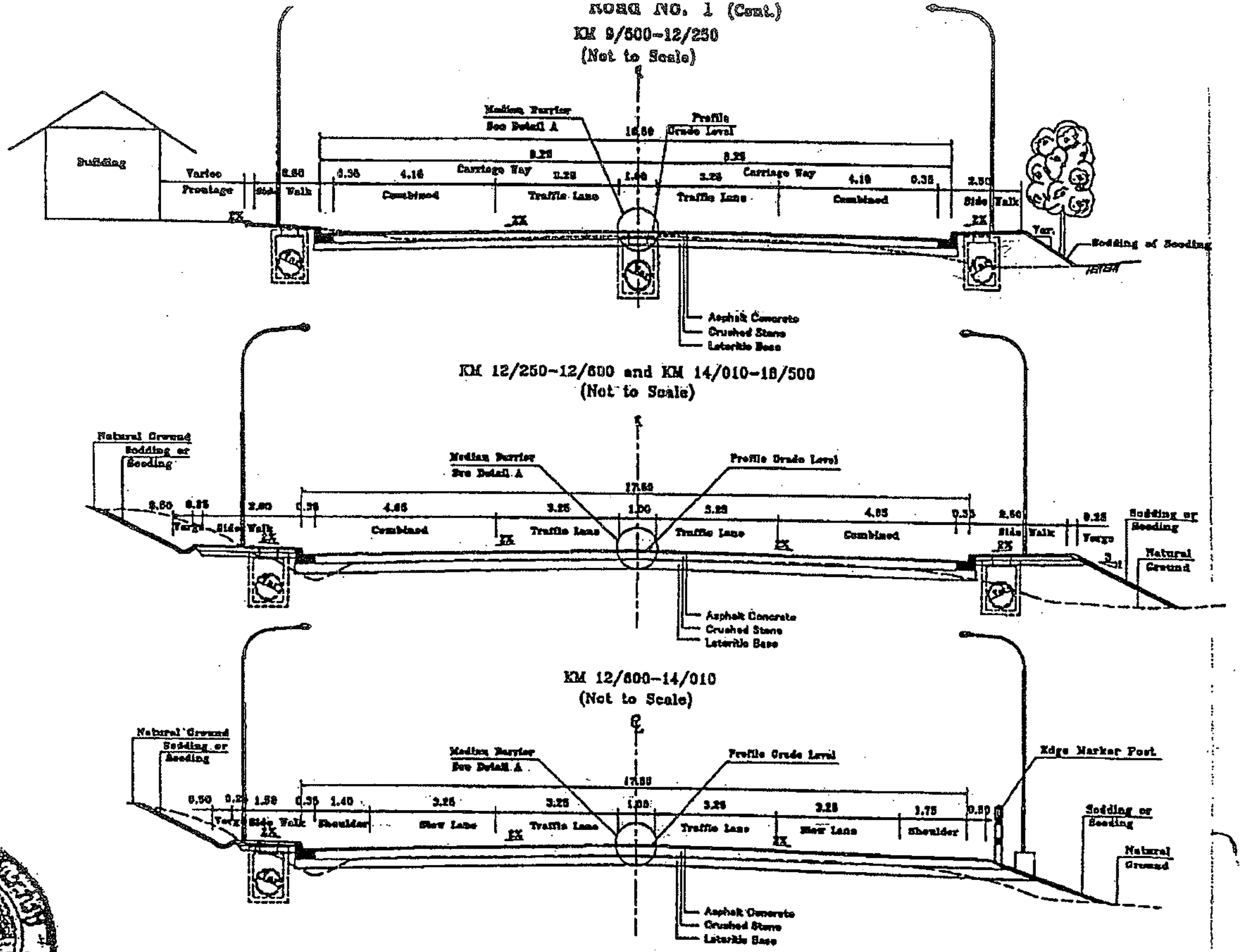
Appendix-6 Drawings (Typical Cross-Sections) Vientiane No.1 Road (2)





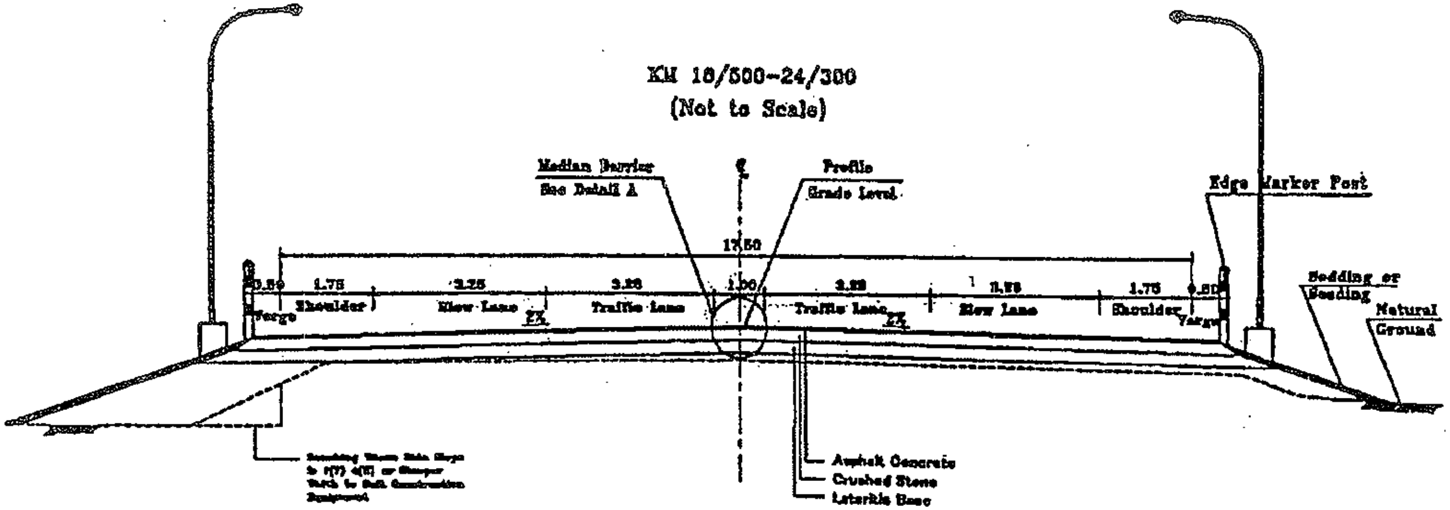


Appendix-6 Drawings (Typical Cross-Sections) Vientiane No.1 Road (3)



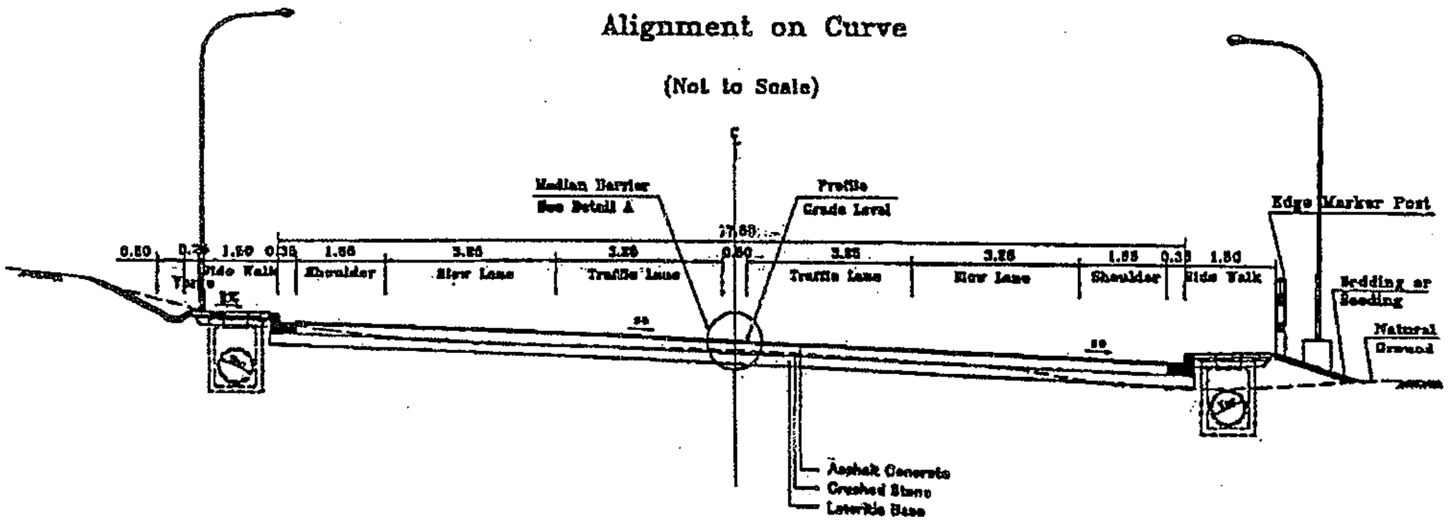
Appendix-6 Drawings (Typical Cross-Sections) Vientiane No.1 Road (4)

KM 18/500-24/300
(Not to Scale)


Median Barrier
See Detail A
Profile
Grade Level
Edge Marker Post
17.50
0.50
1.75
3.25
3.25
1.00
3.25
3.25
1.75
0.50
Verge
Shoulder
Slow Lane
Traffic Lane
Traffic Lane
Slow Lane
Shoulder
Verge
2%
2%
Sodding or
Seeding
Natural
Ground
Asphalt Concrete
Crushed Stone
Laterite Base

Alignment on Curve

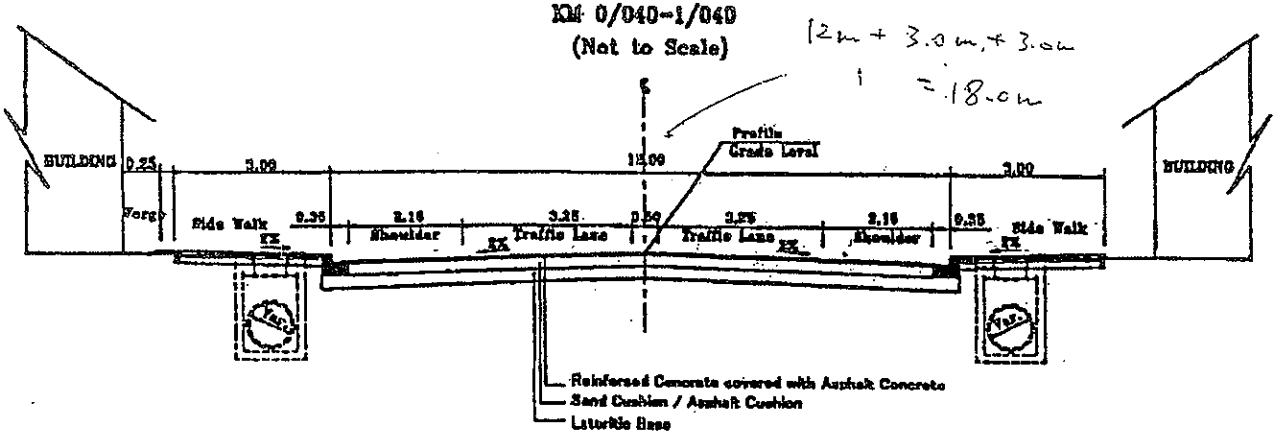
(Not to Scale)


Median Barrier
See Detail A
Profile
Grade Level
Edge Marker Post
17.50
0.50
0.25
1.50
0.35
1.55
3.25
3.25
0.50
3.25
3.25
1.55
0.35
1.50
Verge
Side Walk
Shoulder
Slow Lane
Traffic Lane
Traffic Lane
Slow Lane
Shoulder
Side Walk
2%
Sodding or
Seeding
Natural
Ground
Asphalt Concrete
Crushed Stone
Laterite Base

Appendix-6 Drawings (Typical Cross-Sections) Vientiane No.1 Road (5)

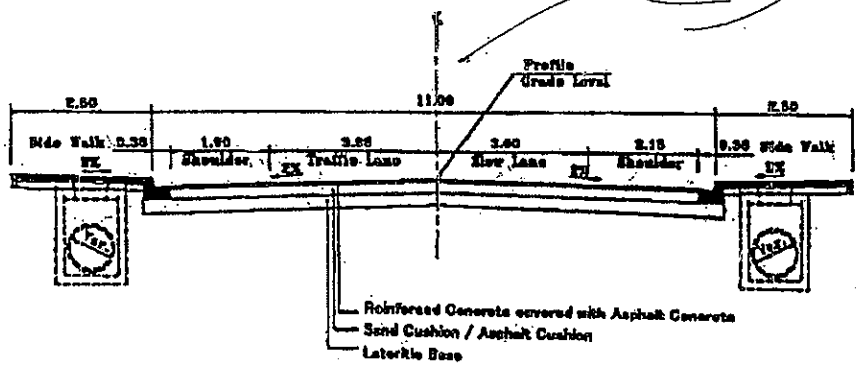
KM 0/040-1/040
(Not to Scale)

12m + 3.0m + 3.0m
= 18.0m



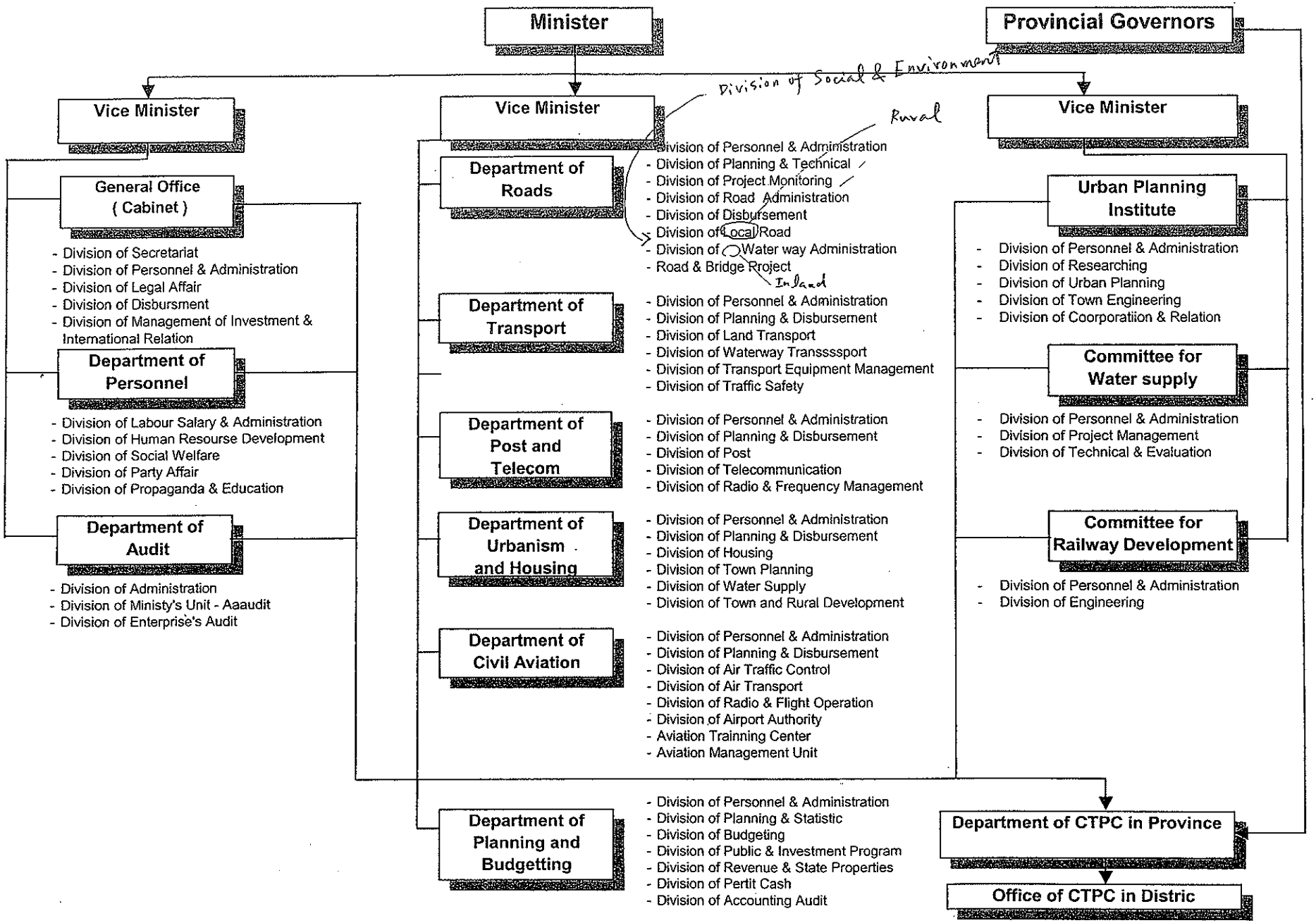
KM 1/040-3/160
(Not to Scale)

11m + 2.5 + 2.5 = 16.0m



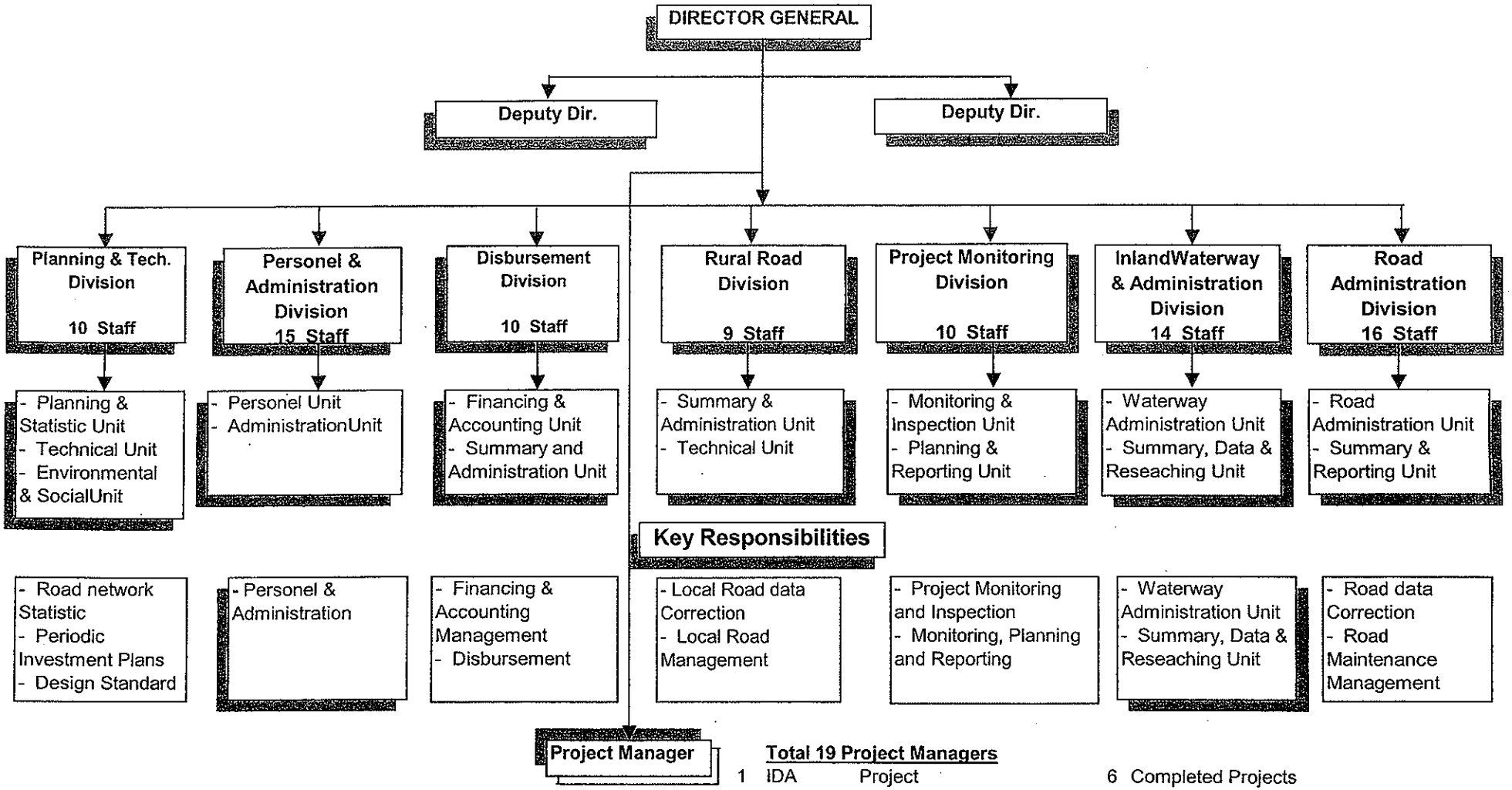
Appendix-6 Drawings (Typical Cross-Sections) Vientiane No.1A Road

ORGANIZATION CHART FOR MCTPC



資料-2 （1）交通・運輸・郵政・建設省（MCTPC）組織図

ORGANIZATION CHART FOR DEPARTMENT OF ROADS



Total No. of Supervision Consultant Contract 12 Projects

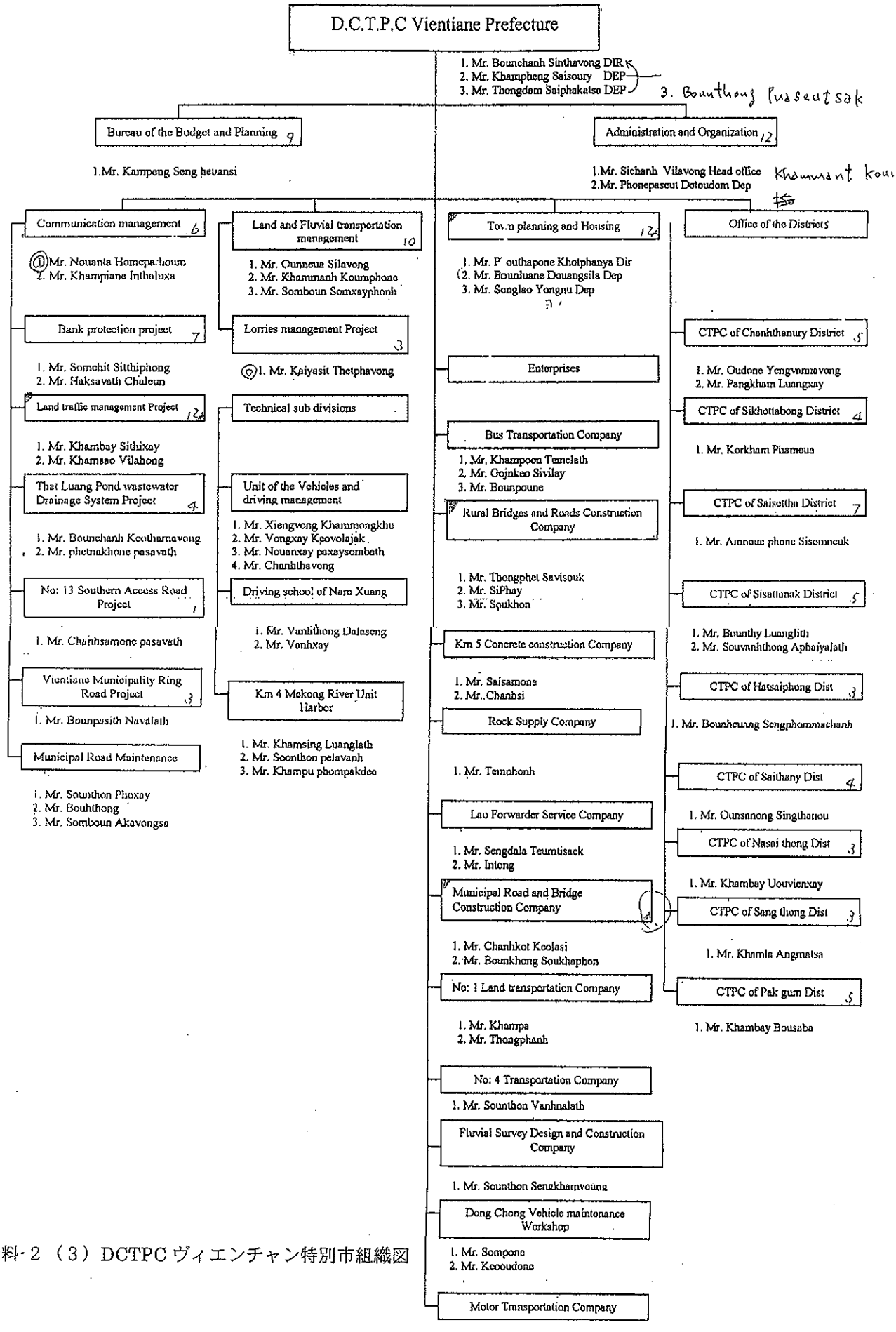
Total 19 Project Managers

1	IDA	Project
3	ADB	Do
2	JICA	Do
1	KFW	Do
2	SIDA	Do
1	JBIC	Do
9	Other Donors Project	

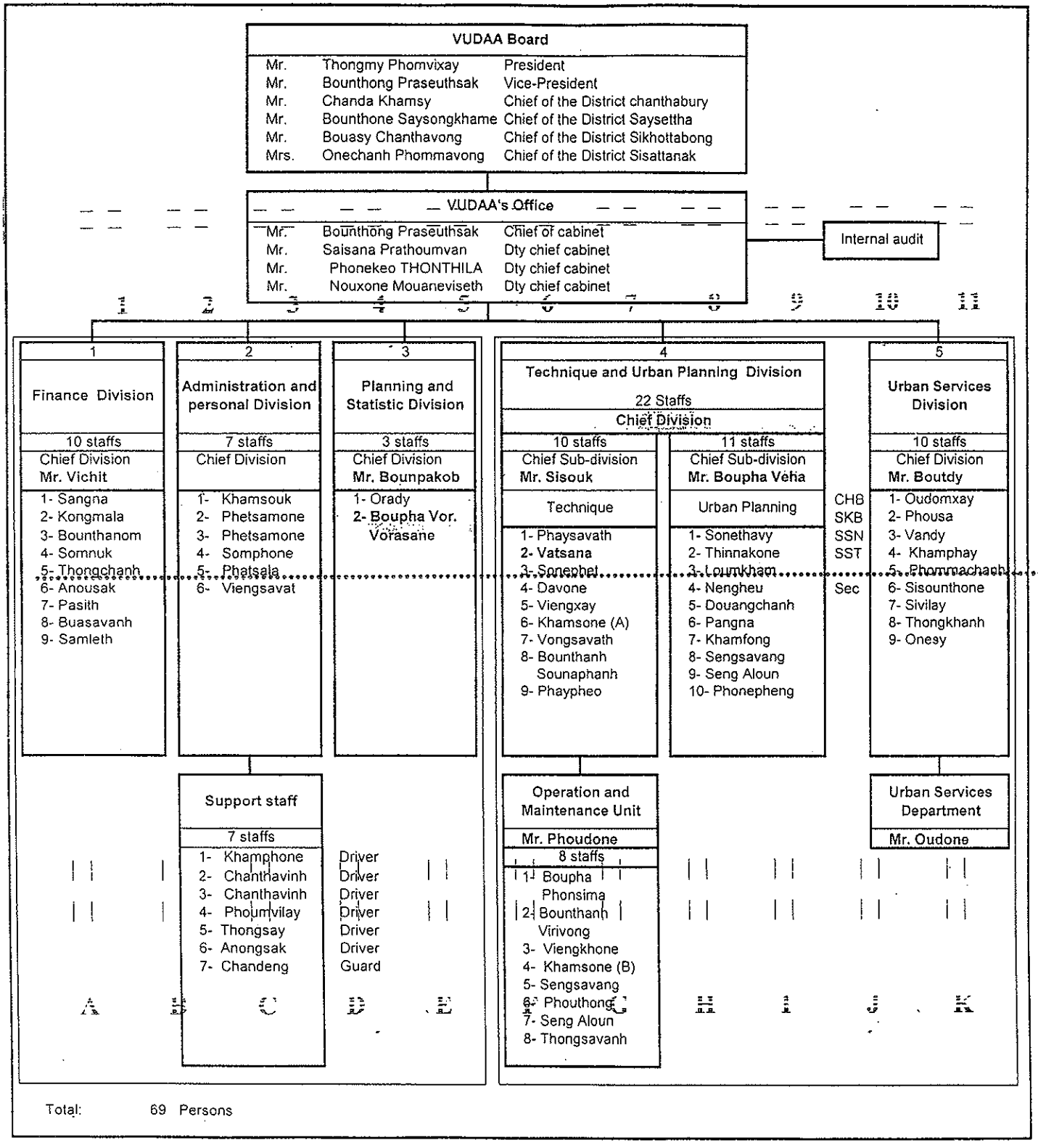
6 Completed Projects (Defect Liability Period)
7 On-going Project
6 New Starts

資料-2 （2） MCTPC 道路局（DOR）組織図

Organization Chart / of The Division of Communication
Transport Post and Construction (D.C.T.P.C)



資料-2 （3） DCTPC ヴィエンチャン特別市組織図



資料-2（4）ヴィエンチャン都市開発管理機構（VUDAA）組織図

organigramme VUDAA VUDAA-Staff

資料-３　　ヴィエンチャン１号線道路現況総括表

評価項目		道路区間				
		シカイ交差点　①　ラックソン交差点　②　タカオ交差点　③　チナイモ交差点　④　No.５道路との交差点　⑤　友好橋ゲート				
		I--------- 1 方向 2 車線 ----------I				
		I--------- 2 方向 4 車線 ----------I--------- 1 方向 2 車線 ----------I------ 2 方向 2 車線 ----------I---------- 2 方向 2 車線 ----------I---------- 2 方向 2 車線 ----------I				
		0.0km　4.0 km　4.0km　3.0 km　7.0km　5.3 km　12.3km　3.0 km　15.3km　9.0 km　24.2km				
交通量の増加や走行速度の低下はどうか	12 時間交通量(2001 年)	全車：34,085 台 （乗用車、その他） 9,596 台 （オートバイ・自転車） 24,489 台	全車：41,389 台 （乗用車、その他） 13,592 台 （オートバイ・自転車） 27,797 台	全車：19,505 台 （乗用車、その他） 5,095 台 （オートバイ・自転車） 14,410 台	全車：15,554 台 （乗用車、その他） 3,819 台 （オートバイ・自転車） 11,735 台	全車：16,823 台 （乗用車、その他） 6,056 台 （オートバイ・自転車） 10,769 台
	94 年交通量と増加率	全車：25,710 台/12 時間 133%：4.16%/年	全車：37,377 台/12 時間 111%：1.50%/年	全車：16,600 台/12 時間 118%：2.39%/年	全車：13,498 台/12 時間 115%：2.02%/年	全車：13,498 台/12 時間 125%：3.24%/年
	走行速度	30km/h (現況設計速度：80km/h)	38km/h (現況設計速度：60km/h)	40km/h (現況設計速度：80km/h)	45km/h (現況設計速度：80km/h)	40km/h (現況設計速度：80km/h)
現況舗装の損傷および支持力の状態はどうか	車道部	ラヴェリング、磨耗が著しい。 パッチングの跡が多い。	ラヴェリング、磨耗が著しい。 路面の変状はみられない。	ラヴェリング、磨耗が著しい。パッチングの跡が多い。	ラヴェリング、磨耗が著しい。 パッチングの跡が多い。	ラヴェリング、磨耗が著しい。 亀甲状クラック多く、路面の変状が見られる。車道端の損傷が著しい。
	路　肩	SBST 路肩の変状と亀甲状クラック著しい。	SBST 路肩の磨耗と変状及び亀甲状クラック多い。	未舗装による路肩の変状と路肩の泥化と粉塵化が著しい。	未舗装による路肩の変状と路肩の泥化と粉塵化が著しい。	未舗装による路肩の変状と路肩の泥化と粉塵化が著しい。
	車道部の路盤及び路床の支持力（CBR）	上層路盤：16% 下層路盤：13% 路床　　：4%	上層路盤：13% 下層路盤：16% 路床　　：4%	上層路盤：25% 下層路盤：13% 路床　　：6%	上層路盤：25% 下層路盤：24% 路床　　：1%	上層路盤：10% 下層路盤：17% 路床　　：7%
幹線道路及び重要施設へのアクセス機能		国道 13 号線北、T2-1 道路、ワッタイ国際空港	国道 13 号線南（2 号線）、４号線 A、3 号線、4 号線、大統領官邸	４号線 A、ラクシ港	-	5 号線、メコン国際友好橋
現況道路敷地内で道路改修が行えるか	現況道路幅員	道路幅：23.0~26.0m 車道及び路肩幅：19.0~20.0m 歩道あるいは路側余裕幅： 4.0~6.0m（両側）	No.1：セタティラート通り 道路幅：20.0~21.5.0m(Type 1) 15.0~16.0m(Type 2) 車道及び路肩幅：15.5m(Type 1) 9.0m(Type 2) 歩道：4.0~6.0m（両側） No.1A：サムセンタイ通り 道路幅：15.0~18.0m 車道及び路肩幅：9.0~12.0m 歩道: 4.0~6.0m（両側）	道路幅：17.5~20.5m 車道及び路肩幅 11.5~14.5m 路側余裕幅：12.0m(路側両側)	道路幅：19.5m 車道及び路肩幅：7.5m 路側余裕幅：12.0m(路側両側)	道路幅：17.0m 車道及び路肩幅：7.5m 路側余裕幅：9.5m(路側両側)
	MCTPC の改修計画 道路幅員	道路幅：26.0m 車道及び路肩幅：20.0m 歩道あるいは路側余裕幅： 6.0m（両側）	No.1：セタティラート通り 道路幅：21.5m(Type 1) 15.0m(Type 2) 車道及び路肩幅：15.5m(Type 1) 9.0m(Type 2) 歩道：4.0~6.0m（両側） No.1A：サムセンタイ通り 道路幅：14.0~16.0m 車道及び路肩幅：9.0~12.0m 歩道：4.0~6.0m（両側）	道路幅：22.5m 車道及び路肩幅：16.5m 歩道：6.0m（両側）	道路幅：20.5~23.5m 車道及び路肩幅：17.5m 歩道あるいは路側余裕幅： 片歩道(3.0m)あるいは歩道なし区間も計画。	道路幅：17.5~23.5 m 車道及び路肩幅：17.5m 歩道あるいは路側余裕幅： 片歩道(3.0m)あるいは歩道なし区間も計画。
	MCTPC の改修計画 車線構成	2 方向 6 車線(このうち 2 車線は緩速車線)	No.1：セタティラート通り 1 方向 3 車線(このうち 1 車線は緩速車線) No.1A：サムセンタイ通り 1 方向 4 車線(このうち 2 車線は緩速車線)及び 1 方向 2 車線	2 方向 4 車線 (このうち、2 車線は混合交通車線)	2 方向 4 車線	2 方向 4 車線
降雨による浸水や道路冠水はどうか	道路冠水の状況	降雨による道路冠水の発生頻度が比較的高い。 冠水頻度：年間 20 回前後 冠水深　：20 - 30cm 冠水時間：2 – 4 時間	降雨による道路冠水の発生頻度が極めて高い。 冠水頻度：降雨の度ごと 冠水深　：30 - 60cm 冠水時間：2 – 8 時間	降雨による道路冠水が区間内の数ヵ所で観測される。 発生頻度は低く、冠水の深度は 20cm 程度、2 時間前後で水が引く。	縦断こう配が凹部になる地点において、降雨時に道路冠水が発生する。発生頻度は低く、冠水時間も短い。	道路部が周辺の地盤より高いため、降雨による道路冠水は無い。
	現　況排水施設	８割以上の全区間に側溝が敷設されている（両側敷設区間は約 800m）。しかし、側溝にはゴミや土砂が堆積し、排水機能が著しく低下している。	No.1：セタティラート通り 全区間に側溝（一部暗渠）が敷設されている（両側敷設区間は約 2,150m）。 No.1A：サムセンタイ通り 全区間の 90%に側溝（一部暗渠）が敷設されている（両側敷設区間は約 2,450m）。 しかし、両区間とも側溝にはゴミや土砂が堆積しており、排水機能が著しく低下している。	全区間の約 50%に当たる 2,650m に排水施設が敷設されている（両側敷設区間は約 400m）。しかし、側溝にはゴミや土砂が堆積し、排水機能が低下している。	側溝、暗渠等の排水施設は敷設されていない。	側溝、ﾊﾟｲﾌﾟｶﾙﾊﾞｰﾄ等の排水施設は、敷設されていない。
	将来排水施設計画	歩道下：4,000m 道路中央部：2,700m 排水先水路：３ヵ所	No.1：セタティラート通り 歩道下：2,900m 道路中央部：800m 排水先水路：２ヵ所 No.1A：サムセンタイ通り 歩道下：3,000m 排水先水路：４ヵ所	歩道下：5,300m 道路中央部：2,650m 排水先水路：５ヵ所	歩道下：2,900m 排水先水路：５ヵ所	歩道下：2,850m 排水先水路：４ヵ所
沿道施設および支障家屋等	寺院、学校、病院等の公共施設	寺院：５、学校：２、病院：１ その他：政府機関	No.1：セタティラート通り 寺院：８、学校：２、病院：１ その他：政府機関、大統領官邸 No.1A：サムセンタイ通り 学校：４、その他：政府機関	寺院：３、学校：３、 病院：１	寺院：１	寺院：２、学校：２
	事業における収用対象施設数	木造家屋　　：１ ｺﾝｸﾘｰﾄ造家屋：２ ポーチ　　：２９	No.1：セタティラート通り ｺﾝｸﾘｰﾄ造家屋：１ ポーチ　　：１２ No.1A：サムセンタイ通り ｺﾝｸﾘｰﾄ造家屋：１ ポーチ　　：４	木造家屋　　：２０ ｺﾝｸﾘｰﾄ造家屋：６ ポーチ　　：１７	木造家屋　　：１２ ｺﾝｸﾘｰﾄ造家屋：２ ポーチ　　：１５	木造家屋　　：３０ ｺﾝｸﾘｰﾄ造家屋：５ ポーチ　　：１０

参考資料：（１）「ヴィエンチャン市道路／排水現況調査　最終報告書」（在外開発調査）、2002 年　国際協力事業団

（２）「Vientiane Municipality Road Project, Road 1 and Road 1A 最終報告書及び設計図面集」、2000 年　MCTPC

注：事業における収用対象施設数は、1995 年の測量結果を基にした設計図面からに拾いだした数である。

資料-４　ローカルコンサルタントリスト

表 4.1　建設関連コンサルタント

No.	コンサルタント名	Tel.
1	LTEC (Lao Transport Engineering Consult.)	313510
2	ECSD	211356
3	Engineering Construction Co.	450134
4	Finnmap FM- International	215302
5	HEC Engineering Co. Ltd.,	450134
6	International Consultants Construction	215302
7	Lao Consulting Group	217155
8	Maunsell	312795
9	Mek Consulting Group	313259
10	Nor Consult	412466
11	Novatech	213147
12	Rasita Gravel & Sand Co. Ltd.,	219494
13	RS Engineering Co., Ltd.,	252242
14	SK Geotech Co. Ltd.,	412155
15	STS Consultants	213810
16	SMED Consultants Ltd.,	217035
17	Somvang Engineering	212825
18	Transfield Lao Co. Ltd.,	313330
19	Worley international Ltd.,	212258
20	CB Survey (Bangkok, Thailand)	3913937

表 4.2　環境・社会調査専門コンサルタント

No.	コンサルタント名	Tel.
1	District Upland development & Conservation Project	213196
2	Lao Consulting Group	313259
3	Mausell	215470
4	Resource Management Research	218552
5	SCC Natura	313322

資料-５　質問票回答

The Preparatory Study
on
The Project
for
Improvement of Road Sector
in
The Lao People's Democratic Republic

Questionnaire

January　2003

A JICA Preparatory Study Team, assembled to provide technical assistance for highway development in Vientiane Metropolitan area (Vientiane No.1 Road), intends to draw up material necessary to carry out the preparatory study.

This questionnaire asks for information necessary directly or indirectly for preparatory study work to be carried out by the road traffic planners of the JICA Preparatory Study Team.

We would grateful for the receipt of the responses as soon as possible after you will have received.

I. Organization, Administration and Support Agencies

Item	Description	Function	Responsibility	Name of responsible person and telephone number to contact
1. Function and role of the following organizations for implementation of the project	1. Ministry of Communication Transport, Post and Construction (MCTPC) 2. Department of Road (DOR), MCTPC 3. Vientiane Municipality Department of communication , Transport and Construction (DCTPC) 4. Vientiane Urban Development Authority (VUDAA) 5. Science Technology and Environment Agency (STEA) 6. Lao National Mekong Committee	It is described in the material of the attached paper. It is described in the material of the attached paper. It is described in the material of the attached paper. It is described in the material of the attached paper. - -	It is described in the material of the attached paper. It is described in the material of the attached paper. It is described in the material of the attached paper. It is described in the material of the attached paper.	Mr.Sommad PHOLSENA Vice Minister, MCTPC Tel(856-21)412741,Fax 414132 Mr.Viengsavath SIPHANDONE Director General (DOR) Tel. (856-21) 412741,Fax 414132 Mr.Thongdam SAYPHAKASA Director General (DCTPC) Tel. (856-21)212629

II. Socio-Economic Data/Information

Item	Description	Availability		Name of Materials
		Available(Yes or No)	Source	
1. Existing/future development plan and projects in the study area	1. National socio-economic development strategy (2010-2020) 2. Fifth Five year socio-economic development plan (2001-2005) 3. Latest socio-economic indicators	Yes Yes No		Lao Version
2. Existing urban development plans and reports in the study area	1. Transportation /road development plan 2. Industry development plan	No No		
3. Land use plans and maps	1. Present and future plan	No		

III. Technical Data/Information (1)

Item	Description	Availability		Name of Materials
		Available(Yes or No)	Source	
1. The presently used standards, manuals, guidelines and specification for plan, design and supervision	1. Road Geometric standard 2. Bridge standard 3. Pavement standard 4. Drainage standard 5. Disaster prevention manual 6. Flood control manual 7. Road traffic capacity manual 8. Road structural manual 9. Road construction manual 10. Road construction specification 11. Road maintenance manual 12. Geotechnical standard	Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	MCTPC, DOR Planning Technical Division	Road Design Manual
2. Aerial photos, topographic maps, and land use map covering the study area	1. Aerial photo 2. Topographic maps 3. Existing land use maps	Yes Yes No	National Geographic Department	
3. Meteorological data in the study area	1. Monthly rainfall data for the past 5-10 years 2. Temperature, humidity and wind data for the past few years	Yes Yes	MCTPC, DOR, Inland waterway Administration Division Meteorology Department	
4. Hydrological data of rivers in the study area	1. Hydrological flow and water level at the observation stations 2. Flood information	Yes Yes	MCTPC, DOR, Inland waterway Administration Division	
5. Geological and geotechnical data in the study area	1. Geological and soil distribution map 2. Existing reports about results of geological/soil investigation 3. Seismic description and data for the past years	Yes Yes Yes	LTEC LTEC LTEC	

III. Technical Data/Information (2)

Item	Description	Availability		Name of Materials
		Available(Yes or No)	Source	
6. Traffic data for the past and present in the study area	1. Traffic volume by vehicle type 2. Number of registered vehicles 3. Breakdown of freight and passengers carried by the roads 4. Record of traffic accidents (type, causes, location, etc) 5. Existing axle load and ESA (the number of equivalent standard axles load (t))data	Yes Yes Yes Yes Yes	MCTPC Transportation Department	
7. Data/information related Roads in the study area	1. Road network map showing the road classification. 2. Road inventory (road type, pavement, drainage and their condition)	Yes Yes	LTEC LTEC	
8. Reports/information of the past or on-going road development project closely related to the study		No		
9. Assistance of foreign, and international organization concerned closely to the study area	1. Name of country/organization 2. Outline of the project 3. Amount of assistance	No		

IV. Environmental Issues

Item	Description	Availability		Name of Materials
		Available(Yes or No)	Source	
1.Legislation .	1. Law/guidelines on environmental impact assessment	Yes		
	2. Environmental quality standards (pollution, noise, vibration, fine particles of stone ,coal and metal)	Yes	MCTPC, DOR Social Environmental Division	
	3. Law/guidelines/policy on land acquisition and resettlement	Yes		
2. Affiliation to . international conventions on environmental conservation	1. Bilateral convention		-	-
	2. Multilateral convention			- -
3. Present environmental . condition in the study area	1. Cultural heritage or archaeological site	Yes		“
	2. Location of environmentally vulnerable areas	Yes		
	3. Species of valuable animals and plants	No	Ministry of Information & Culture Museum & Antiquities Department	
	4. Location of particular areas officially protected such as national parks	Yes		
	5. Distribution of important landscape or scenery for tourism	Yes		

V. Availability of Local Consultants and Institutions, and Information of Construction Company

Item	Description	Availability		Person in charge	Firm's Address Telephone
		Available(Yes or No)	Full name of firm		
1. Name & contact point of local consultants who reasonably quote the following works	1 Traffic survey - road side traffic account - road side OD survey - travel time survey	Yes			
	2. Soil & geological survey	Yes			
	3. Topographic survey	Yes	LTEC		
	4. Aerial photograph survey	No			
	5. Bridge and highway design	Yes			
2. Data/information for construction company and construction material supply firm	1. Name, contact point of construction company	Yes			
	2. Name, contact point of construction material supply firm	Yes			

VI. Bidding rate & Unit Price/Cost

Item	Description	Specification	Price/cost (US$)	Remarks
1. Bidding rate of man power in the metropolitan area	1. Senior Engineer 2. Junior Engineer 3. Surveyor 4. Operator of computer 5. Interpreter (English-Lao) 6. Forman 7. Skilled labor 8.Operator of machinery 9.Driver 10.Clark 11. Unskilled labor		350/ month 300/ month 200/ month 150/ month 300/ month 300/ month 230/ month 250/ month 100/ month 150/ month 210/ month	
2. Unit price of main construction material in the metropolitan area	1. Cement using RC 2. Crush stone using aggregate or base or sub base course work 3. Reinforcement bar 4. Asphalt bituminous using pavement work 5. Wood using construction form 6. Steel		104/t 10/m^3 650/t /t 150/m^3 /t	Imported from Thailand Imported from Thailand Imported from Thailand Imported from Thailand Domestic
3. About construction cost and maintenance cost for the past and on-going improvement road that is similar to our project road .	1. Construction cost (/km), road name , dimension, location. 2. Maintenance cost (/km) , road name , dimension, location.			
4. Fuel	1. Petrol 2. Diesel		3,450 kip/l 3,158 kip/l	
5. Photocopy and bookbinding			- -	
6. Office Equipment	1. Photocopy machine 2. Facsimile machine		300-500/ month 100/ month	
7. Car rental with driver and fuel	1. Wagon 4WD 2. Sedan 3. Land cruiser		30/day 30/day 40/day	In Vientiane Prefecture

資料-６　収集資料一覧

収集リスト (1)

番号	資料の名称	発行年	型版	形態	頁数	Original or Copy	部数	収集先又は発行機関
1	Road Design Manual	1996	A4	製本	200	コピー	1	Department of Roads (DOR), MCTCP
2	ヴィエンチャン１号線現況排水路図	2003	A3	ﾍﾟｰﾊﾟｰ	55	オリジナル	1	現地調査結果
3	VUISP 事業計画（道路、排水）	2003	A4/A3	ﾍﾟｰﾊﾟｰ	3	コピー	1	Vientiane Urban Development and Administration Authority (VUDAA)
4	ヴィエンチャン特別市排水システム計画図		A0	ﾍﾟｰﾊﾟｰ	1	コピー	1	LTEC
5	Regulation on Environment Assessment in the Lao PDR	2002	A5	製本	93	コピー	1	Social Environment Division (SED), DOR, MCTPC
6	Environmental Guidelines	1995	A4	製本	27	コピー	1	SED of DOR, MCTPC
7	Manual of Environmental Impact Assessment Procedures For Road Project in the Lao PDR	1998	A4	製本	71	コピー	1	SED of DOR, MCTPC
8	地形図　1:200,000	―	A1	ﾍﾟｰﾊﾟｰ	1	コピー	1	―
9	地形図　1:10,000	1999	A1	ﾍﾟｰﾊﾟｰ	6	オリジナル	1	National Geographic Department
10	ラオス国プロジェクト形成調査(運輸交通分野)	1998	A4	製本	100	コピー	1	国際協力事業団
11	Project completion Report on the Vientiane Integrated Urban development Project	2002	A4	製本	50	コピー	1	Asian Development Bank (ADB)
12	The Survey on Existing Road And Drainage condition in Vientiane Municipality Project Final Report-1 (Road)	2002	A4	製本	200	コピー	1	MCTPC／国際協力事業団
13	The Survey on Existing Road And Drainage condition in Vientiane Municipality Project Final report-1 (Road) Summary	2002	A4	製本	30	コピー	1	MCTPC／国際協力事業団
14	The Survey on Existing Road And Drainage condition in Vientiane Municipality Project Final report-1 (Road) Drawing	2002	A4	製本	60	コピー	1	MCTPC／国際協力事業団
15	The Survey on Existing Road And Drainage condition in Vientiane Municipality Project Final report-1 (Road) Roads Inventory	2002	A4	製本	200	コピー	1	MCTPC／国際協力事業団

収集リスト（２）

番号	資料の名称	発行年	型版	形態	頁数	Original or Copy	部数	収集先又は発行機関
16	The Survey on Existing Road And Drainage condition in Vientiane Municipality Project Final report-1 (Road) Traffic Survey	2002	A4	製本	100	コピー	1	MCTPC／国際協力事業団
17	Vientiane Municipality Road Project Technical Design Report Part 1	2000	A4	製本	100	コピー	1	MCTPC (CDRI)
18	Vientiane Municipality Road Project Technical Design Report Part 2	2000	A4	製本	100	コピー	1	MCTPC (CDRI)
19	Traffic Survey Lao P.D.R.	2000	A4	製本	100	コピー	1	MCTPC & DCTPC (国際協力事業団)
20	欠番							
21	Project Appraisal Document for Road Maintenance Project	2001	A4	製本	50	コピー	1	World Bank (WB)
22	Vientiane Integrated Urban Development Project Final Report (Main Report)	1994	A4	製本	100	コピー	1	MCTPC (ADB)
23	The past 10 year and present Rainfall & Water level Data in Vientiane Municipality	2003	A4	デジタル	20	コピー	1	Inland waterway administration Division, DOR, MCTPC
24	Vientiane urban infrastructure and services (VUISP) Final Report Main volume	2001	A4	製本	100	コピー	1	VUDAA
25	Vientiane urban infrastructure and services (VUISP) Final Report Sanitation, Drainage & Wastewater Management	2001	A4	製本	100	コピー	1	VUDAA
26	Vientiane urban infrastructure and services (VUISP) Final Report Appendices	2001	A4	製本	100	コピー	1	VUDAA
27	Vientiane municipality Road project Road No.1 (Part 1), Road No.1A (Drawing)	2002	A3	製本	400	コピー	1	MCTPC (CDRI)
28	Vientiane municipality Road project Road No.1 (Part 2), Road No.1A (Drawing)	2002	A3	製本	300	コピー	1	MCTPC (CDRI))