

Road Classification System in Bhutan



Royal Government of Bhutan
Ministry of Works & Human Settlement
Department of Roads

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Foreword

The national road network has expanded rapidly since the construction of the Phuentsholing-Thimphu Highway the country's first road. At present there are over 12000 km of motorable roads of 15 different categories constructed and maintained by various agencies. A comprehensive road classification system is, therefore, essential to delineate ownership and roles of various agencies involved in planning, budgeting, implementation and maintenance of the national road network.

The objective of the road classification system is to help establish:

- i. clear understanding on definition and technical standards of various road categories;
- ii. clear understanding among stakeholders and agencies as regards to their role in road sector development; and
- iii. increased transparency in decision making.

This classification manual provides an official technical requirements of different types of road structures and its road right of way (RoW). This Manual provides guidance on the functional classification and access management of roads. It establishes a uniform and integrated classification system for the country. This also gives an in-depth look at the road network of the country with the figurative notation of road lengths.

The Ministry of Works and Human Settlement is pleased to issue the *Road Classification System in Bhutan* for the information of the stakeholders as well as the general public. It is with great hope and aspiration that this Manual would serve as a useful reference to the stakeholders in understanding their role in road sector development and result in increased transparency in decision making related to further expansion of the road network in the country.

Tashi Delek.



DORJI CHODEN
MINISTER

Road Classification System in Bhutan

1.0 Introduction

The national road network has expanded rapidly since the construction of the Phuentsholing- Thimphu Highway, the country's first road. At present, there are over 12,000 km of motorable roads of 15 various categories constructed and maintained by various agencies. A comprehensive road classification system is therefore essential to delineate ownership and roles of various agencies involved in planning and budgeting, implementation and maintenance of the national road network.

2.0 Objectives

The main objectives of the road classification system is to help establish:

- (i) Clear understanding on definitions and technical standards of various road categories;
- (ii) Clear understanding among stakeholders and agencies as regards to their role in road sector development and
- (iii) Increased transparency in decision making.

3.0 Classification of Roads

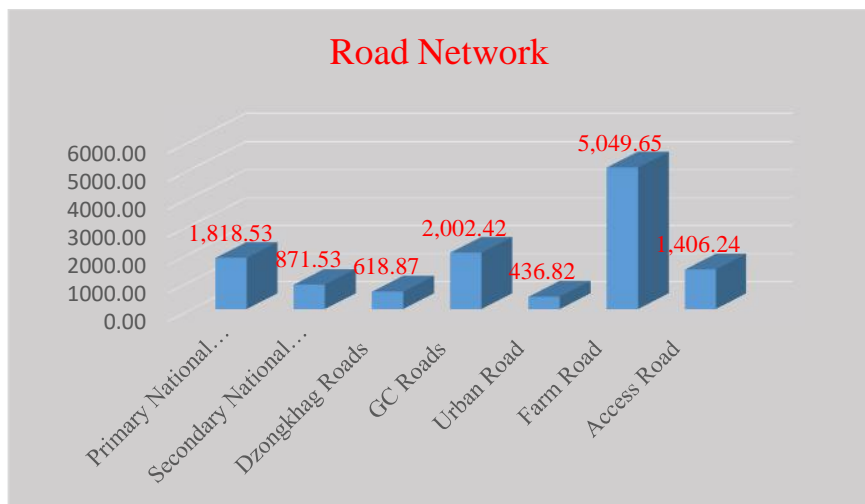
As per the Road Act of Bhutan, 2013, Road Network in the country is classified into following types of roads:

1. National Highways;
2. Dzongkhag Roads;
3. Thromde Roads;
4. Farm Roads; and
5. Access Roads

Road Summary

EXISTING ROAD NETWORK AS ON APRIL 2017

Sl.No.	Road Type	Length (km)
1	Primary National Highway	1818.53
2	Secondary National Highway	871.53
3	Dzongkhag Roads	618.87
4	GC Roads	2002.42
5	Urban Road	436.82
6	Farm Road	5049.65
8	Access Road	1406.24
Total =		12204.05



Further, the National Highway shall consist of:

- (1) International/Asian Highways;
- (2) Primary National Highways and
- (3) Secondary National Highways

As per the Road Act of Bhutan 2013, Chapter 2, clause 11, “***The Department of Roads, under the Ministry responsible for roads will be the National Authority for all roads in the country***”. Therefore, any re-designation of roads have to be done by the Department of Roads (DoR)/Ministry in consultation with the relevant agencies. Upgrading of an existing road to a higher class will be done based on the traffic thresholds / minimum traffic levels specified in Annex – 1 and other socio-economic considerations. All proposed roads should link to an existing road of equal or higher classification to ensure logical planning and investment in the network.

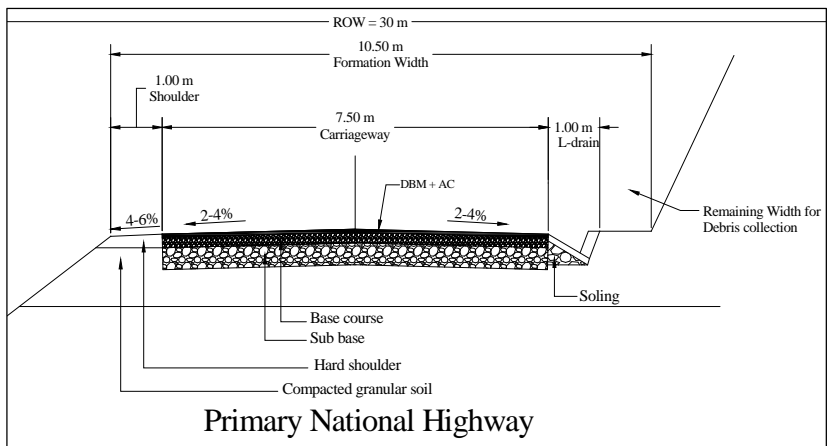
3.1 National Highway (NH)

3.1.1 Asian Highway (AH)

The Asian Highway project, also known as the Great Asian Highway, is a cooperative project among countries in Asia and Europe and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), to improve the highway systems in Asia. The Phuentsholing - Thimphu Highway (174km) has been designated by the Royal Government as the Asian Highway No.48 (class III) within Bhutan. The design standards for the Asian Highway specified in the *Intergovernmental Agreement on the Asian Highway Network* are equivalent to the design standards of Primary National Highway (PNH).

3.1.2 Primary National Highway (PNH)

Primary National Highways are those roads of strategic importance carrying high traffic volume. It should be the shortest possible route between two designated important points and provide width for two lanes of traffic. This road will connect three or more Dzongkhag Centers. Its specification will be as follows and Annex - 1:

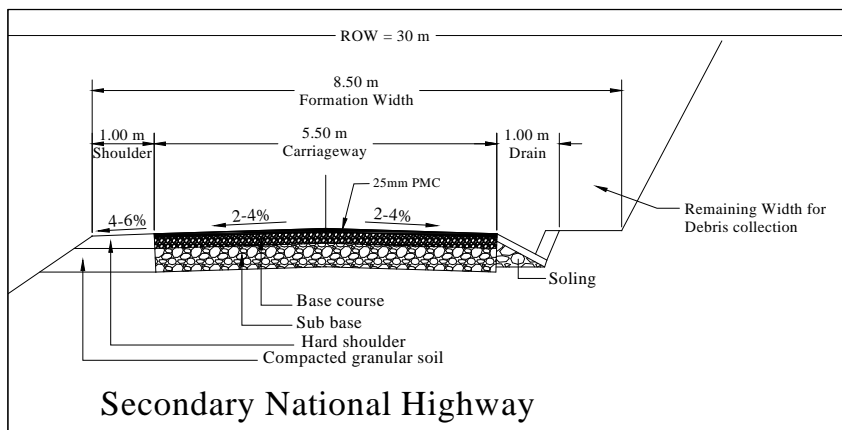


3.1.3 Secondary National Highway (SNH)

Secondary National Highway are those roads that:

- (i) connect a Dzongkhag Centre to a road of equal or higher classification;
- (ii) provide connectivity between two Dzongkhag Centres.

It should be the shortest route between two designated points and provide width for two-lane traffic. The design standards for SNH will be as per specification below and annex – 1.



Responsibilities for AH, PNH, and SNH

The Department of Roads will be solely responsible for planning and implementation of AH, PNH and SNH. DoR shall also be the authority for development of the national road network with full authority to set technical standards for all categories of roads and bridges, including re-classification of roads, as and when it is necessary to match the socio-economic development of the country.

All AHs, PNHs and SNHs shall have necessary safety measures including road signs and guardrails as per the DoR standards.

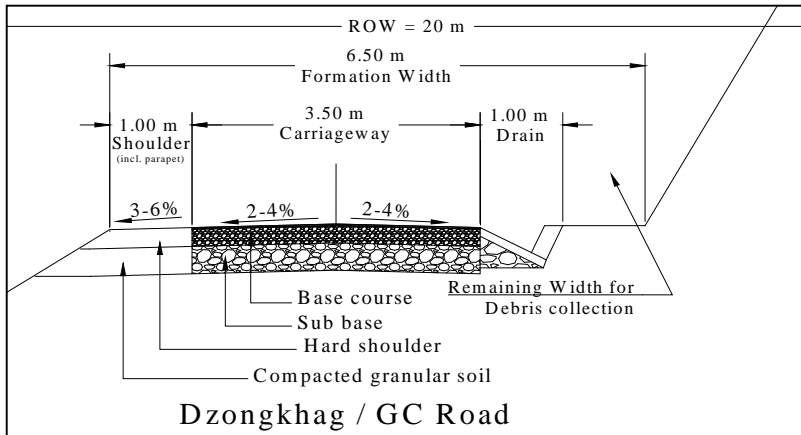
3.2 Dzongkhag Road (DR)

The Dzongkhag Road will be one that:

- (i) connects a Dzongkhag Centre and an integrated Gewog Centre/Gewog Administration Office;
- (ii) connects a Dzongkhag Centre and a Dungkhag Centre not otherwise designated as AH, PNH, SNH;
- (iii) connects a Dungkhag Centre with another Dungkhag Centre within the Dzongkhag not otherwise designated as AH, PNH, SNH;

- (iv) connects a Dzungkhag Centre with a Gewog Centre/Gewog Administration Office;
- (v) connects an integrated Gewog Centre/Centres to an existing road of equal or higher classification.

The design standards for Dzungkhag Road is as below and annex - 1:



Responsibilities for Dzungkhag Roads

As per the Road Act 2013, Dzungkhag Roads including access roads shall stay with the Dzungkhag Administration. Prior to Road Act 2013, clause 13, except for farm and access roads, all other roads including the Dzungkhag Roads have been maintained by the Department of Roads.

3.3 Thromde Road

Thromde road means all types of roads located within the municipal boundary not otherwise designated as AH, PNH and SNH. Roads located within the municipal boundaries shall be governed by the rules and regulations of the concerned municipality.

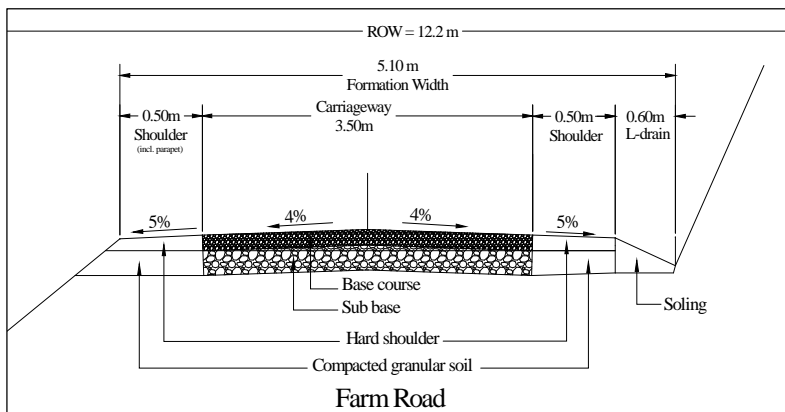
Responsibilities for Thromde Roads

Thromde Roads will be executed either by the Thromde or DoR wherever relevant including maintenance. Design standards for Thromde Roads will be set by DES in consultation with DoR. Until the standards for Thromde Road is revised, the urban road standard of 2002 will be used and interpreted widely in the thromde.

3.4 Farm Road

Farm Roads are those roads that link farmland areas/villages to an existing road of equal or higher classification to enable the transportation of inputs to the farm and agriculture produce to the market. Like other higher classes of roads, construction of Farm Roads should be inclusive of cost of appropriate bridges.

Prioritization/selection of Farm Roads will be done by the Gewog Tshogde and Department of Agriculture based on the criteria set by the Department of Agriculture (DoA). The design standards for Farm Roads will be set by DoR in consultation with Ministry of Agriculture and Forest (MoAF). The design standards for Farm Roads is as below and annex - 1:



Responsibilities for Farm Roads

Due to the limited capacity of the Gewog Administration, the Dzongkhag Administration will carry out pre-investment studies, geotechnical investigations, survey, design and procurement for Farm Roads with technical backstopping from DoA.

Planning, prioritization, budgeting and implementation of Farm Roads will be done by the respective Gewogs with technical backstopping from Dzongkhag Administration/DoA.

Technical backstopping in terms of in-house on-the-job training and technical guidance to DoA/Dzongkhag engineers for bridges on Farm Roads will be provided by DoR as and when required. DoA should employ full-time bridge engineers and build their own in-house capacity.

Major maintenance including monsoon damage restoration, pavement rehabilitation and improvement works is carried out by the concerned Dzongkhag Administration. Budget for major maintenance should be maintained with the Dzongkhag Administration.

Routine maintenance of Farm Roads is the responsibility of the concerned beneficiaries. Budget for routine maintenance will be provided based on the norms of DoA. Maintenance of Farm Roads will be carried out as prescribed in the latest DoA *Maintenance Manual*.

3.5 Access Roads

Access Roads are roads listed as listed below:

- (i) Forest Road
- (ii) Health Road

- (iii) Education Road
- (iv) Telecommunications Road
- (v) Power Road
- (vi) Private Road
- (vii) Project Road
- (viii) Public Institution Road

Design standards for Access Roads

Technical backstopping such as provision of design standards and specifications for Access Roads will be provided by DoR in consultation with the concerned agencies. Design and take off point for access roads shall be approved by the Department of Roads. Access Roads should be constructed to a minimum of Farm Road standard.

Responsibilities for Access Roads

Pre-investment studies, geological investigation, survey, design, procurement, construction, and maintenance of Access Roads will be done by the agencies/communities/individuals concerned.

4.0 Road category and Route Number in the Country

4.1 National Highway

4.1.1 Asian Highway

As of now there is only one Asian Highway in the country from Phuentsholing to Thimphu and designated as AH 48 Class III.

Sl.#	Name of Road	Route No.	Road Length (km)
1	Phuentsholing – Thimphu	AH 48	174.00
Total =			174.00

4.1.2 Primary National Highway

The two lane road connecting two important places are designated as the Primary National Highway, and they run from east to west and north to south. There are primarily two roads running from east to west: one in the north and other in the south. Depending on the year of construction, the numbers are assigned after its name; for example, PNH 1. The first two serial number i.e 1 & 2 are allocated to the highways running from west to east. The highway from south to north starts from number 3.

A table below shows the name of road with its designation:-

Sl.#	Name of Road	Route No.	Road Length (km)
1	Thimphu (Semtokha) – Trashigang (Kheri)	PNH 1	512.00
2	Samtse - Dewathang	PNH 2*	230.00
3	Samdrup Jongkhar - Trashigang	PNH 3	180.00
4	Gelephu - Trongsa	PNH 4	240.50
5	Sarpang - Wangdue	PNH 5	188.00
6	Chunzom – Paro (Drukgyal Dzong)	PNH 6	40.00
7	Chunzom – Haa (Damthang)	PNH 7	79.00
8	Misina – Punakha (Dzong)	PNH 8	12.00
9	Jhumja – Kharbandi (via manitar)	PNH 9	55.00
10	Tingtibi - Panbang	PNH 10	77.53
11	Nganglam - Kurizampa	PNH 11	98.00
12	Chazam - Trashiyangtse	PNH 12	45.00
Total =			1818.53

PNH* - There are few missing links on this route.

4.1.3 Secondary National Highway

The shortest route between designated points and provide a width for one lane traffic. The secondary national highway run from east to west and north to south and the serial numbers are assigned based on the year of construction.

The table below shows the SNH with its route number:-

Sl.#	Name of Road	Route Number	Length (km)
Sceondary National Highway			
1	Nangar - Ura (via Jakar)	SNH1	61.00
2	Tshelingkhor - kothakpa	SNH2	36.00
3	Gangola - Lhuentse	SNH3	65.00
4	Sunkosh - Dagana	SNH4	87.00
5	Punakha - Gasa	SNH5	75.15
6	Bondey - Haa (via Chelela)	SNH6	62.00
7	Sipsu - Samtse	SNH7	8.70
8	Wangdigang-Tingtibi via Zhemgang	SNH8	57.00
9	Kothakpa -Tsebar - Mikuri - Durungri	SNH9	79.60
10	Wangdue - Khuruzam road	SNH10	49.00
11	Dewathang - Samrang	SNH11	74.50
12	Jenkhana - Namcheykhola - Halalay	SNH12	136.00
13	Dagapela - Dalbari	SNH13	80.58
14	Samrang - Jomotshangkha	SNH14	
Total =			871.53

4.2 Dzongkhag Roads

The roads connecting Dzongkhag centre and an integrated Gewog centre/Dungkhag centre or Dungkhag centre to Geowg centre are designated as the Dzongkhag Road. All Gewog Centre Roads are Dzongkhag Roads. As of now the Dzongkhag Roads are not assigned specify number due to complexity of its numbering system as there are numerous Dzongkhag Roads. And some of the road length are less than 500m.

The table below shows the Dzongkhag Roads.

Sl.#	Name of Road	Length (km)
Gewog Centre Roads		
Bumthang		
1	Phurjoen-GC (Chhume)	0.10
2	Kurjithang-Zangtharpo (Choekor GC)	0.42
3	Dungmethang-Mesithang (Tang GC)	17.00
4	Yurgang-GC (Ura)	0.10
	Sub-Total	17.62
Chukha		
1	Trashgatsel -Bjabcho GC (takeoff from Trashigatshel)	0.40
2	Gedu-Paksikha (Bongo GC)	12.25
3	P/Ling-Thimphu (118km) -Chapcha GC	0.40
4	Jumja-Tala-road-Dala GC	0.60
5	Ganglakha-Dungna GC	44.00
6	Geling GC	Under Const.
7	Pakshikha-Shari (Getena GC)	68.60
8	Mining road junction -Longchina GC	17.10
9	Dungna - Metekha GC	17.50
10	Purvay-Pling GC (via mining road)	9.70
11	Pakshikha - Sampheling GC	1.50
	Sub-Total	172.05
Dagana		
1	Gersaling-Dorona GC	14.40
2	Yungsibe- Drujeygang GC	9.90
3	Gersaling GC	**
4	Goshi GC	0.20
5	Kana GC	0.40
6	Karmaling GC	12.00
7	Drujeygang-Khebisa GC	18.80
8	Kamdara-Lajab GC	21.10
9	Chemjonng-Lamoizingkha GC	3.00
10	Hordunglum-Ninchula GC	15.00
11	Sunkosh-daga road-Tashiding GC	0.65
12	Tshakhang-Tsankhag GC	26.35
13	Dagaepla-Tsendagang GC	1.50
14	Kalizizngkha-Tseza GC	5.00
	Sub-Total	128.30

Dzongkhag Road

Sl.#	Name of Road	Length (km)
Gewog Centre Roads		
Gasa		
1	Punakha-Gasa road-Goenkhamae GC	0.36
2	Punakha-Gasa road- Goenkhatoe GC	0.75
3	Gasa-Laya GC Road	7.00
4	Lunana GC	**
Sub-Total		8.11
Haa		
1	Haa-Damthang road-Bji GC	6.50
2	Khamina-Gakiling GC	13.00
3	Haa-Damthang road-Katsho GC	7.00
4	Jenkhana-Khamina (Sama GC)	8.50
5	Khamina-Sangbaykha (Sangbay GC)	13.00
6	Chuzom-Haa road-Uesu GC	4.60
Sub-Total		52.60
Lhuentse		
1	Lhuentse-Gangzur GC	5.50
2	Autsho-Jarey GC	16.30
3	Khomazam-Khoma GC	5.45
4	Gangzur-Kurtoe GC	39.00
5	Menbi GC	0.20
6	Selibi-Metsho GC	15.00
7	Tangmachu-Minjev GC	8.10
8	Autsho- Tshenkhar GC	0.15
Sub-Total		89.70
Mongar		
1	Kafu-Balam GCr	12.90
2	Yadhi- Chaskhar GC	11.40
3	Gangola-Chali GC	7.37
4	Thungdari- Drametse GC	18.40
5	Gvelposhing-Drepong GC	20.40
6	Yangbari-Daksa (Gongdue GC)	23.35
7	Udaric-Jurmey GC	17.20
8	Zimzorong-Kengkhar GC	25.30
9	Mongar town- GC Office	1.40
10	Rolong- Narang	18.50
11	Yadhi Main H/way- Ngatshang GC	0.12
12	Lingmethang-Saleng GC	0.22
13	Yadi-Sherimung GC	17.70
14	Menchugang - Silambi GC	65.00
15	Chaskar - Thangrong GC	17.50
16	Horong- Tsakaling GC	11.30
17	Yongkola-Banjar (Tsamang GC)	21.30
Sub-Total		289.36

Dzongkhag Road

Sl.#	Name of Road	Length (km)
Gewog Centre Roads		
Paro		
1	Main highway-Doga GC	0.30
2	Shari-Dopshari GC	3.00
3	Atsho Damji-Doteng GC	2.20
4	Jangsa Bridge-Hungrel GC	1.80
5	Gaptey-Lamgong GC	8.00
6	Woochu-Lungnyi GC	0.30
7	Main road-Naja GC	0.60
8	Deyangkha-Shaba GC	3.50
9	Drugyel-Tsento GC	0.60
10	Nemizampa-Woochu GC	0.30
	Sub-Total	20.60
PemaGatshel		
1	Yurung-Chimung GC	27.40
2	Nganglam town-Choekhorling GC	24.00
3	Denchi-Mandi (Chongshing Borang GC)	14.50
4	Kurung-Decheling GC	17.20
5	Dungmin-Dungme GC	0.35
6	Denchi-Khar GC	7.50
7	Kherigoenpa-Yelchen Nangong GC	30.00
8	Nganglam-Panbang road-Norbugang GC	0.11
9	Nangkor-Shumar GC	0.30
10	Denchi-Yurung GC	20.00
11	Mongling-Zobel GC	1.12
	Sub-Total	142.48
Punakha		
1	Darshinging School Junction-Barp GC	1.13
2	Samadingkha-Domakhay (Chhubu GC)	13.00
3	Dzomo GC	0.00
4	Punakha-Gasa-gup office (Geonshari GC)	0.17
5	Metsina-Punakha-Guma GC	1.60
6	Punakha-Gasa road-Kabjisa GC	3.06
7	Wangdue road Junction-Lingmukha GC	10.25
8	Shengana Bjime GC	12.30
9	Talo GC	1.70
10	Toepisa GC	**
11	Samadingkha B.Bridge-Towang GC	1.40
	Sub-Total	44.61

Dzongkhag Road

Sl.#	Name of Road	Length (km)
Gewog Centre Roads		
Samdrup Jongkhar		
1	JNP road- Dewangthang GC	0.17
2	Narphung- Tsangchiloo (Gomdar GC)	12.35
3	Jomotshangkha-Langchenphu GC	1.66
4	Minjiwoong - Jompa (Lauri GC) work in progress	36.50
5	Tsangchhuthama-Martshalla GC	13.00
6	Shekpashing-Orong GC	12.35
7	S/choling -Pemathang GC	6.92
8	RBA Gate - Phuntshothang GC	0.58
9	Highway to Samrang GC	0.30
10	Jomotshangkha - Minjiwong (Serthi GC)	23.40
11	Tshangchilo - Wangphu GC	12.57
	Sub-Total	119.80
Samtse		
1	Dorokha - Dumtoe GC	27.60
2	Halhalay-Dorokha (Dophoochen GC)	26.00
3	Dorokha - Denchuka GC	30.00
4	Samtse-Sipsoo (39.10km)- Namgaycholing GC	4.20
5	Norbugang GC	17.40
6	Tendu -Norgaygang GC	17.40
7	Gola Bazar- Pemaling GC	4.20
8	Halalay-Gomtu (Phuntshoperi GC)	30.00
9	Samtse GC	**
10	Jitti-Sanganchoeling GC	4.00
11	Samtse-Pling road- Tading GC	1.80
12	Tashichoeling GC	**
13	Samtse-Sipsoo (24km) - Tendu GC	**
14	Samtse-Sipsoo (15.9km) - Ugyentse GC	1.00
15	Ghumauney Channel-Yoetseltse GC (Chekeyling)	2.00
	Sub-Total	165.60

Dzongkhag Road

Sl.#	Name of Road	Length (km)
Gewog Centre Roads		
Sarpang		
1	Masanikkhola-Chuzegang GC road	9.00
2	Chipchipey-Pankhey (Chhudzom GC)	48.00
3	10-11km of Sarpang-Gelephu- Dekiling GC Office	1.50
4	Singye road- Gakiling GC Offcie	0.09
5	Dawla khola- Gelephug GC office	1.10
6	Surey - Jigmechoeling GC office	0.35
7	Bhur- Samtenling GC office	1.33
8	Ranibagan- Senghe GC office	9.50
9	Aie bridge-Shershong GC	11.60
10	Darjethang-Shompangkha GC	0.27
11	Umling-Taray thang Geog	7.00
12	Serzhong- Umling Gewog	9.00
	Sub-Total	98.74
Thimphu		
1	Chang GC	0.10
2	Dagala GC	1.30
3	Genekha Dzongkhag road-Genekha GC	0.10
4	Pangrizampa-Kabesa (Kawang GC)	3.03
5	Lingzhi GC	No Road
6	Soe GC	No Road
7	Simtokha flyover - Mewang GC	0.10
8	Dodena-Barshong (Naro GC)	29.00
	Sub-Total	33.53

Dzongkhag Road

Sl.#	Name of Road	Length (km)
Gewog Centre Roads		
Trashigang		
1	Riju-Barstam GC	20.00
2	Dogorom-Bidung GC	12.00
3	Kanglung GC	0.50
4	Kharungla-Kangpara GC	38.00
5	Khaling GC	**
6	Wamrong (Reserboo) -Lumang GC	12.00
7	Khardung - Merak GC	37.50
8	Radhi- Phongmey GC	7.00
9	Rangjung-Radhi GC	8.00
10	Sakteng GC	under const.
11	Lungtenzampa- Samkhar GC	9.00
12	Rangjung-Changmey (Shongphu GC)	5.00
13	Trashiyangphu-Phegpari (Thrimshing GC)	15.56
14	Khenthongmani-Udzorong GC	25.00
15	Chazam-Yangneer GC	22.50
Sub-Total		212.06
Trashiyangtse		
1	Tsharzam - Bomdiling GC	8.50
2	Tshergom-Jamkhar GC	5.75
3	Khamdang GC	**
4	Doksum - Ramjar GC	16.50
5	Khamdang - Toetsho GC	6.00
6	Gomkora-Tomzhangtsen GC	12.45
7	Trashiyangtse GC	**
8	Doksum-Yalang GC	21.50
Sub-Total		70.70
Trongsa		
1	Dragteng GC	**
2	Wangdigang-Korphu GC	19.50
3	Langthil GC	**
4	Kakaling-Bemji (Nubi GC)	17.00
5	Tangsibji GC, Trashiling- Gewog Office	0.26
Sub-Total		36.76

Dzongkhag Road

Sl.#	Name of Road	Length (km)
Gewog Centre Roads		
Tsirang		
1	Mendelgang-Barshong GC	9.50
2	Kikhortang-Dunglegang GC	9.03
3	Damphu-Lopsibotey road to Goseling GC	0.18
4	Damphu--Lopsibotey road to Kikhorthang GC	1.42
5	Mendrelgang GC	**
6	Reserboo-Mendrelgang road to Patshaling GC	0.52
7	Tsirangtoe-Phuntenchu GC	5.25
8	Darachu-Tsiran road - Rangthangling GC	0.30
9	Damphu-Lopsibotey road to Semjong GC	7.33
10	Phutenchu-Sergithang GC	11.88
11	Damphu-Sunkosh road to Tsholingkhar GC	0.07
12	Semjong-Tsirangtoe GC	12.10
	Sub-Total	57.58
Wangduephodrang		
1	Jarugang zam- Athang GC	7.00
2	Tekizam-Bjena road to Bjena GC	0.19
3	Kamichi-Daga GC	0.16
4	Tashidingkha-Dangchu GC	18.00
5	Chortendangrim to Gangte GC	0.15
6	Gaeshetshowom to Gasetshogom	11.20
7	Gaselo feeder road to Gaestshogwom	5.70
8	Chuzomsa-Kazhi GC	9.00
9	Agolu to Nahi GC	3.40
10	Tsho - Nysho GC	9.00
11	Langjala- Phangyual GC	4.00
12	Tabading - Phobji GC	14.00
13	Nayrubji- Rubesa GC	2.00
14	Wangdi-Chuserbu Highway-Sepchu GC	0.11
15	Waangdi Market- Thedtsho GC	0.13
	Sub-Total	84.03
Zhemgang		
1	Therang junction-Khomshar (Bardo GC)	24.26
2	Nishokazam-Bjoka Geog	30.80
3	Kodonzampa-Limapong (Goshing GC)	12.00
4	Nangkor GC	**
5	Ngangla GC	**
6	Pangkhar GC	**
7	Dakpai-Buli-Sebdagang (Shingkar GC) (14km	67.20
8	Tingtibi-Gelephu road to Trong GC (96km takeoff	0.50
	Sub-Total	134.76
	Grand Total =	2002.42
1	Other Dzongkhag Road combined	618.87

** Near the Existing Roads

4.3 *Thromde Road, Farm Roads & Access Roads*

Thromde Roads

Sl. #	Road Type	Length (km)
1	Total Thromde Road in the Country	436.82

Farm Roads

Sl. #	Dzongkhag	Length of FR*
1	Bumthang	187.00
2	Chhukha	355.00
3	Dagana	177.00
4	Gasa	24.60
5	Haa	31.60
6	Lhuentse	435.45
7	Mongar	687.00
8	Pemagatshel	388.00
9	Paro	69.00
10	Punakha	318.00
11	Samdrupjongkhar	303.00
12	Samtse	172.00
13	Sarpang	295.00
14	Trashigang	274.00
15	Trashigang	530.00
16	Thimphu	82.00
17	Trongsa	178.00
18	Tsirang	169.00
19	Wangduephodrang	258.00
20	Zhemgang	116.00
Total Length of Farm Road =		5,049.65
* Source GNHC		

Access Road

Sl. #	Road Type	Length (km)
1	Total Access Road	1406.24

Road Design Standard

Road Classification		Primary National Highway				Secondary National Highway				Dzongkhag Road				Farm Road			
		L	R	M	S	L	R	M	S	L	R	M	S	L	R	M	S
Terrain classification		L	R	M	S	L	R	M	S	L	R	M	S	L	R	M	S
Design speed (km/h)		60	50	40	30	50	40	30	20	40	30	20	15	30	25	15	10
Traffic volume (vpd)		>200				100-200				30-100				<30			
Width (m)	Right of way	30				30				20				12			
	Carriageway	7.5				5.5				3.5				3.5			
	Shoulder	1m on valley side				1m on valley side				1m on valley side				0.5x2			
	Drain	1m on hill side				1m on hill side				1m on hill side				0.6			
	Debris Collection	1m on hill side				1m on hill side				1m on hill side				0			
Min. radii of horizontal curve (m)		115	80	50	30	75	75	25	15	75	25	15	15	15 Exceptional =10			
Pavement slope (%)		2-5				2-5				4				4			
Shoulder slope (%)		3-6				4				5				5			
Type of pavement		Double bituminous treatment				Dense bituminous premix				Base Course				Single Layer Base Course			
Max. super-elevation (%)		10				10				10				10			
Max. vertical grade (%)		7				7				7				7			
Structure loading (minimum)		HS20-44				As per DoR standard				As per DoR standard				As per DoR standard			

Note:-

1. Thromde Roads – Design standards to be prepared by DES in consultation with DoR.
2. Access Road - Design standard to be set by DoR in consultation with the concerned agencies.
3. The Design standards for AH are at par with the design standards for PNH.

vpd = vehicles per day, L= Level terrain (0 to 10°), R= Rolling terrain (10 to 25°), M= Mountainous terrain (25 to 60°), S = Steep terrain (More than 60°)