



**Kenya Roads Board**

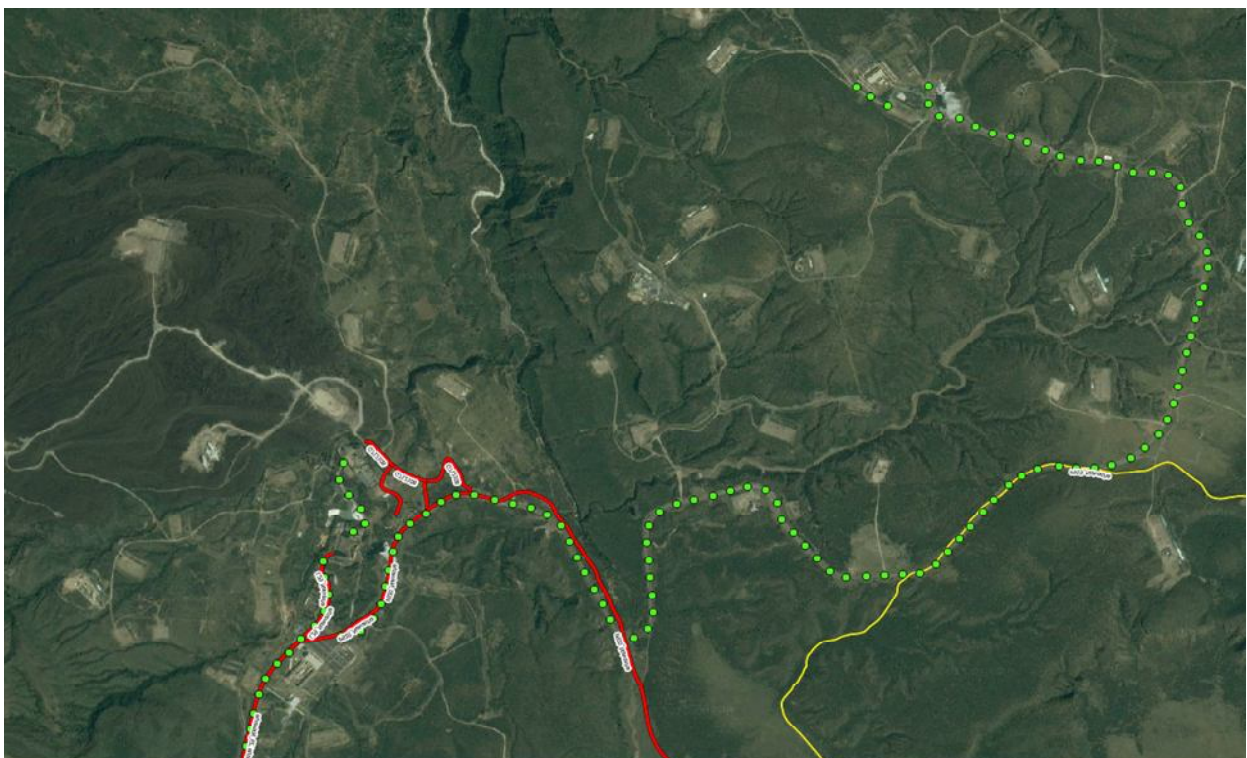
**KENYA TRANSPORT SECTOR SUPPORT PROJECT  
CREDIT No. 4926-KE/5410-KE**

# **Provision of Consultancy Services to undertake Road Inventory and Condition Survey for Western Zone in Kenya**

Contract No.: KRB/720/2015-2016

## **VOLUME 1: FINAL ROAD REGISTER REPORT**

**November 2018**



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## ABBREVIATIONS AND ACRONYMS

Table 0.1: Abbreviations and Acronyms

Abbreviation/Acronym	Description
m	Metres
KRB	Kenya Roads Board
KeNHA	Kenya National Highways Authority
KURA	Kenya Urban Roads Authority
KeRRA	Kenya Rural Roads Authority
MoTIHUD	Ministry of Transport, Infrastructure, Housing and Urban Development
MTRD	Material Testing and Research Department
RICS	Road Inventory and Condition Survey
Km	Kilometre
GIS	Geographical Information System
GPS	Global Positioning System
GOK	Government of Kenya
IDA	International Development Association
ToR	Terms of Reference
FWD	Falling Weight Deflectometer
IRI	International Roughness Index
RR	Road Register
RD	Road

## EXECUTIVE SUMMARY

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### **E1 Scope of Assignment**

Kenya Roads Board (KRB), under the World Bank funded Kenya Transport Sector Support Project (KTSSP), undertook a countrywide Road Inventory and Condition Survey. The project involved mapping of newly constructed and upgraded roads and also updating road condition data for the classified road network. KRB packaged the country into three Zones, Western (21 Counties), Central (13 Counties) and Coastal (13 Counties) Zones.

SMEC International Pty Ltd in association with KIRI Consult Ltd. was commissioned by Kenya Roads Board (KRB) to undertake the Road Inventory and Condition Survey (RICS) Project in 2016 for the Western Zone.

The project commenced on 15<sup>th</sup> August 2016 and had a 15 months contract period. Soon after commencement, a Kick-off meeting was held with the Client followed by a Regional Workshop in September 2016 for all the key stakeholders in the Western Zone.

The objectives of the study were as follows:

- Establish an inventory and condition of the narrow roads network in Kenya which is currently not captured in the KRB Road Inventory and Condition Survey (RICS) database.
- Have these roads assigned numbers and integrate the new data into the existing Road Inventory and Condition database.
- Collect road condition data for the classified road network and update the KRB Road Inventory and Condition geo-database.

### **E2 Methodology for Data Capture**

Data capture was carried out by specially trained field personnel using the state-of-the-art survey equipment. The Consultant recruited and trained a total of 12 Field personnel. They were deployed as follows;

- 5 No. for Road Inventory and condition survey of Narrow Roads with Right of Way between 4 – 9m.
- 5 No. for Road Inventory and Condition Survey of Classified gravel and earth roads.
- 2 No. for inventory and condition survey of structures.

The Teams used Spectra Precision Mobile Mapper 50, 4G with Mobile Mapper Field software, loaded with the data dictionary approved by the Client. The data was captured and transmitted to the Head office on a daily basis for processing by the Consultants GIS Team.

In addition the Consultant sub-contracted the Materials Testing and Research Division (MTRD) of the Ministry of Transport and Infrastructure, Housing and Urban Development (MoTIHUD) to carry out

the inventory and condition survey of all classified paved roads and selected gravel roads in good and fair condition using the Road Laser Profiler, Falling Weight Deflectometer (FWD) and Roughometer equipment.

### **E3 Summary of Road Network Surveyed**

After a vigorous one month training of the staff, the fieldwork commenced on 28<sup>th</sup> September 2016 with a Pilot study in Kiambu County. This was carried out to ensure uniformity and accuracy of data collection amongst all the fieldwork Raters. This was then followed by a detailed fieldwork covering all the 21 counties in Western Zone as listed in the Table below:

A Summary of the road network surveyed in the Western Zone;

No.	COUNTY	LENGTH OF ROADS SURVEYED (Km)						Total Network Surveyed (km)
		CLASSIFIED ROADS			NARROW ROADS			
		Planned (km)	Actual (km)	%	Planned (km)	Actual (km)	%	
1	Bomet	2,041.9	2,020.6	99.0%	1,021.0	1,842.8	180.5%	3,863.4
2	Kericho	1,810.0	1,797.4	99.3%	905.0	2,501.9	276.5%	4,299.3
3	Nyamira	1,136.5	1140.3	100.3%	568.2	558.2	98.2%	1,698.5
4	Kisii	2,232.6	2,216.6	99.3%	1,116.3	910.6	81.6%	3,127.2
5	Migori	2,198.9	2,180.9	99.2%	1,099.5	1,786.8	162.5%	3,967.7
6	Homa Bay	2,587.3	2,559.4	98.9%	1,293.7	1,681.7	130.0%	4,241.1
7	Kisumu	2,726.0	2,712.5	99.5%	1,363.0	1,074.1	78.8%	3,786.6
8	Siaya	2,165.4	2,109.9	97.4%	1,082.7	2,161.6	199.6%	4,271.5
9	Busia	1,563.5	1,549.7	99.1%	781.8	1,683.7	215.4%	3,233.5
10	Bungoma	2,705.2	2,681.3	99.1%	1,352.6	2,536.7	187.5%	5,218.1
11	Kakamega	3,770.4	3,744.0	99.3%	1,885.2	1,548.3	82.1%	5,292.2
12	Vihiga	753.8	744.0	98.7%	376.9	298.5	79.2%	1,042.5
13	Nandi	2,516.2	2,491.5	99.0%	1,258.1	848.9	67.5%	3,340.4
14	Uasin Gishu	4,155.3	4,167.9	100.3%	2,077.6	1,593.7	76.7%	5,761.6
15	Trans Nzoia	1,823.9	1,808.5	99.2%	911.94	970.4	106.4%	2,778.8
16	Elgeyo Marakwet	1,905.3	1,877.0	98.5%	952.7	318.3	33.4%	2,195.3
17	West Pokot	2,000.5	1,969.2	98.4%	1,000.3	582.6	58.2%	2,551.8
18	Baringo (part)	3,072.7	3,055.0	99.4%	1,536.5	774.6	50.4%	3,829.6
19	Marsabit	4,862.5	4,799.1	98.7%	2,431.2	855.8	35.2%	5,654.9
20	Samburu	2,475.2	2,430.8	98.2%	911.9	406.0	44.5%	2,836.8
21	Turkana (part)	5,100.2	5,075.4	99.5%	2,772.8	1,115.0	40.2%	6,190.4
	<b>Overall</b>	<b>53,603.2</b>	<b>53,131.1</b>	<b>99.1%</b>	<b>26,698.8</b>	<b>26,050.3</b>	<b>97.6%</b>	<b>79,181.4</b>



All the planned fieldwork activities was achieved, except the following Constituencies in Turkana and Baringo counties Baringo North, Baringo, South, Tiaty and Turkana East due to insecurity. In addition, three classified roads were left out in West Pokot due to the same reasons.

#### **E4 Data handling and validation**

Using QGIS, data validation was carried out by processing and cleaning the fieldwork data received. The cleaned data was then compared with the original geo-data base received from the Client and Google Earth imagery. The purpose of applying Google-earth imagery against the surveyed data was to cross-check on data collection completeness. In over 95% of the areas covered, the data collection was a success with a huge network of the roads in each county fully mapped. Additional/missed sections of the network were validated for mapping, especially where field teams initially experienced any sort of snags.

Maps and spread sheets were sent to Murang'a County Road Agencies in Central Zone for pilot validation prior to undertaking full data validation for counties in Western Zone. Comments received from the Road Agencies during this validation exercise were addressed prior to preparation of this report.

#### **E5 Working paper on Rural population living within 2Km of All-weather roads**

The Terms of Reference (ToR) called for the Consultant to prepare a Working paper on the percentage of Rural population living within 2Km of all Weather roads. This has been presented in terms of Rural Access Index (RAI)

Rural Access Index (RAI) has been established by the World Bank as a key transport headline indicator with a focus on the critical role of access and mobility in the reduction of poverty in developing countries.

A separate report has prepared and submitted to the Client. A summary of the findings have been incorporated in this report. In summary, the overall Rural Access Index determined for the Western Zone was 84%.

#### **E6 RICS Data collection and Update Framework**

The Consultant was also required to prepare a RICS data collection and Update framework for future reference when further RICS projects are carried out.

A separate report has been submitted addressing current approaches to RICS studies and proposed new framework and a number of recommendations touching on the following;

- (a) Policies and guidelines
- (b) Protocols and standards
- (c) Equipment, processes and procedures

## **E7 RICS Manual for Classified and Narrow roads**

*A separate RICS Manual for Classified and Narrow roads has also been prepared covering the following;*

- *Introduction to RICS*
- *Rationale for RICS data collection*
- *Logistics for RICS*
- *RICS fieldwork*
- *Data transmission and storage*
- *Unpaved roads data processing and analysis*
- *Paved roads data processing and analysis*
- *RICS data output*

## **E8 Overall Findings**

*A total of 53,131 Km of Classified Paved, Gravel and Earth roads have been mapped comprising of 99.1 % of the road network captured during the 2009 RICS assignment 17.5% were found to be in Good Condition, 43.2% in Fair, while 37.8% and 1.4% were in Poor and Under Construction respectively.*

*26,050 Km of Narrow roads have also been mapped during the same period. 14.4% were found to be in Good condition, 38.6% in Fair while 45.5% and 1.4% were in Poor and Under Construction respectively. Of the Narrow roads surveyed 3,503 km amounting to 13.5% were found to have Road Reserve less than 6m. This is less than 30% as noted in the Terms of Reference.*

## **E9 Project Challenges and Lessons Learnt**

*A number of challenges were experienced during the course of the assignment as follows:*

- *Heavy rains experienced in most parts of the Country especially in November 2016 and early December 2016 slowed progress of the fieldwork. However, the Consultant's field teams managed to redeploy field personnel to areas which were motorable despite the heavy rains before returning them to the muddy and nearly impassable sections.*
- *Non-Motorable roads, especially for the Narrow roads, were very common. The Consultant hired local motor cycles for the field teams capturing the data for the Narrow Roads to enable greater and faster accessibility. Additional field staff from the areas being studied were recruited to accompany the Consultant's field staff to provide better local knowledge.*
- *Late receipt of Payment from the Client, at initial stages of the assignment, caused the Consultant to experience cash flow challenges. This delay was mainly due to late receipt of the Advance and Inception report payments. However, the Consultant was able to mobilize financial resources from other projects to enable the project to proceed. The payments for the two invoices were finally received on 10 January 2017 way after the commencement of the Contract on 15 August 2016.*



- *Insecurity in parts of Baringo, West Pokot and Turkana affected the work programme and the Consultant was unable to undertake field work in these areas. The security situation did not improve in time for the fieldwork to be carried out and eventually, no data was collected in these areas as sporadic insecurity activities were still being reported as at the time this report was being prepared.*

# 1. INTRODUCTION AND PROJECT BACKGROUND

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## 1.1. Introduction

Kenya Roads Board (KRB), under the World Bank funded Kenya Transport Sector Support Project (KTSSP), is undertaking Road Inventory and Condition Survey. The project involves mapping of newly constructed and upgraded roads and also updating road condition data for the classified road network.

SMEC International Pty Ltd in association with KIRI Consult Ltd, hereinafter referred to as the Consultant, was commissioned by Kenya Roads Board (KRB) to undertake the Road Inventory and Condition Survey. For the purpose of the assignment, KRB packaged the country into three Zones, Western (21 Counties), Central (13 Counties) and Coastal (13 Counties) Zones. This is the Final Road Register report on the RICS study carried out in the Western Zone.

The report has been prepared in fulfilment of contractual obligations of the Consultant provided under Item 8 of Clause 8 of the Terms of Reference.

This Final Road Register report comprises:

- Chapter 1: Introduction and Project background (this section)
- Chapter 2: RICS Approach and Methodology
- Chapter 3: Final Road Register
- Chapter 4: Working paper on the Rural population living within 2km of all-weather roads
- Chapter 5: RICS data collection and update framework
- Chapter 6: RICS Manual for Classified and Narrow roads
- Chapter 7: Conclusion and Recommendations and
- Appendices

## 1.2. Project Background

The road network in Kenya constitutes the most important mode of transport, estimated to be transporting more than 95% of all freight and passenger traffic. The overall road network in the whole country is estimated to be 250,000 km. However, only 160,886 km of the country's road network has been mapped and inventoried, and it is held in a consolidated GIS database at Kenya Roads Board (KRB).

Between 2007 and 2009 all roads in the inventory were reclassified and numbered using newly developed classification system. This inventoried network covers roads with way-leave reserves of 9.0m and above. A large component of network consisting of narrow roads and tracks with road reserves between 4m and 9m are not mapped. These narrow roads provide important access which eases transportation in both rural and urban areas and are estimated to be between 60,000 km and 90,000 km.

Subsequent inventory changes to the road network, caused by recently constructed and upgraded roads, are not fully captured in the existing KRB geodatabase and the road condition data of these roads needs to be updated in the KRB geodatabase.

### 1.3. Project Objectives

The specific objectives of the study were to:

- Establish an inventory and condition of the narrow roads network in Kenya which is currently not captured in the KRB Road Inventory and Condition Survey (RICS) database.
- Have these roads assigned numbers and integrate the new data into the existing Road Inventory and Condition database.
- Collect road condition data for the classified road network and update the KRB Road Inventory and Condition geo-database.

### 1.4. Contract Details

The Contract Details for the Consultancy Services are as tabulated below.

*Table 1.1: Contract Details*

No.	ITEM	DETAILS
1	Study Title	Road Inventory and Condition Survey for Western Zone
2	Financier	Kenya Transport Sector Support Project funded by World Bank and Government of Kenya
3	Client	Kenya Roads Board
4	Consultant	SMEC International PTY Ltd in Association with KIRI Consult Ltd (Kenya)
5	Date of Notification of Award	27 June 2016
6	Date of contract signing	01 August 2016
7	Commencement date	15 August 2016
8	Original Contract Period (months)	15
9	Original Completion date	14 November 2017
10	Revised Contract Period (months)	26.5
11	Revised Completion date	30 November 2018
12	%age Contract Period elapsed	100%
13	%age Work done	100%

### 1.5. Description of the services

According to the Terms of Reference and the Consultancy Contract, the scope of the assignment is broadly classified into:

- Road Inventory and Condition Survey of Narrow Roads
- Condition Survey of the Classified Road Network

This contract covered the Western Zone and included a total of 21 counties, 130 Constituencies and approximately 53,397 km of currently mapped roads. A total of 26,050 km of narrow roads were mapped on the ground.

The counties that were to be covered in the Western Zone and the respective lengths of inventoried roads as at 2009 survey are shown in Table 1.2 below.

*Table 1.2: Western Zone and lengths of inventoried roads in 2009*

<b>S. No.</b>	<b>County Name</b>	<b>Road Length (km)</b>
1	Bomet	1,633.90
2	Kericho	2,210.30
3	Nyamira	786.20
4	Kisii	2,564.00
5	Migori	2,195.20
6	Homa Bay	2,590.60
7	Kisumu	2,725.60
8	Siaya	2,175.20
9	Busia	1,593.90
10	Bungoma	2,682.30
11	Kakamega	3,779.20
12	Vihiga	754.70
13	Nandi	2,476.00
14	Uasin Gishu	4,155.40
15	Trans Nzoia	1,828.40
16	Elgeyo-Marakwet	1,898.40
17	Baringo	3,072.30
18	West Pokot	2,012.30
19	Turkana	5,029.70
20	Samburu	2,479.40
21	Marsabit	4,754.30
	<b>Total</b>	<b>53,397.30</b>

The demarcation of the zones together with the counties is as indicated in Figure 1-1 below.

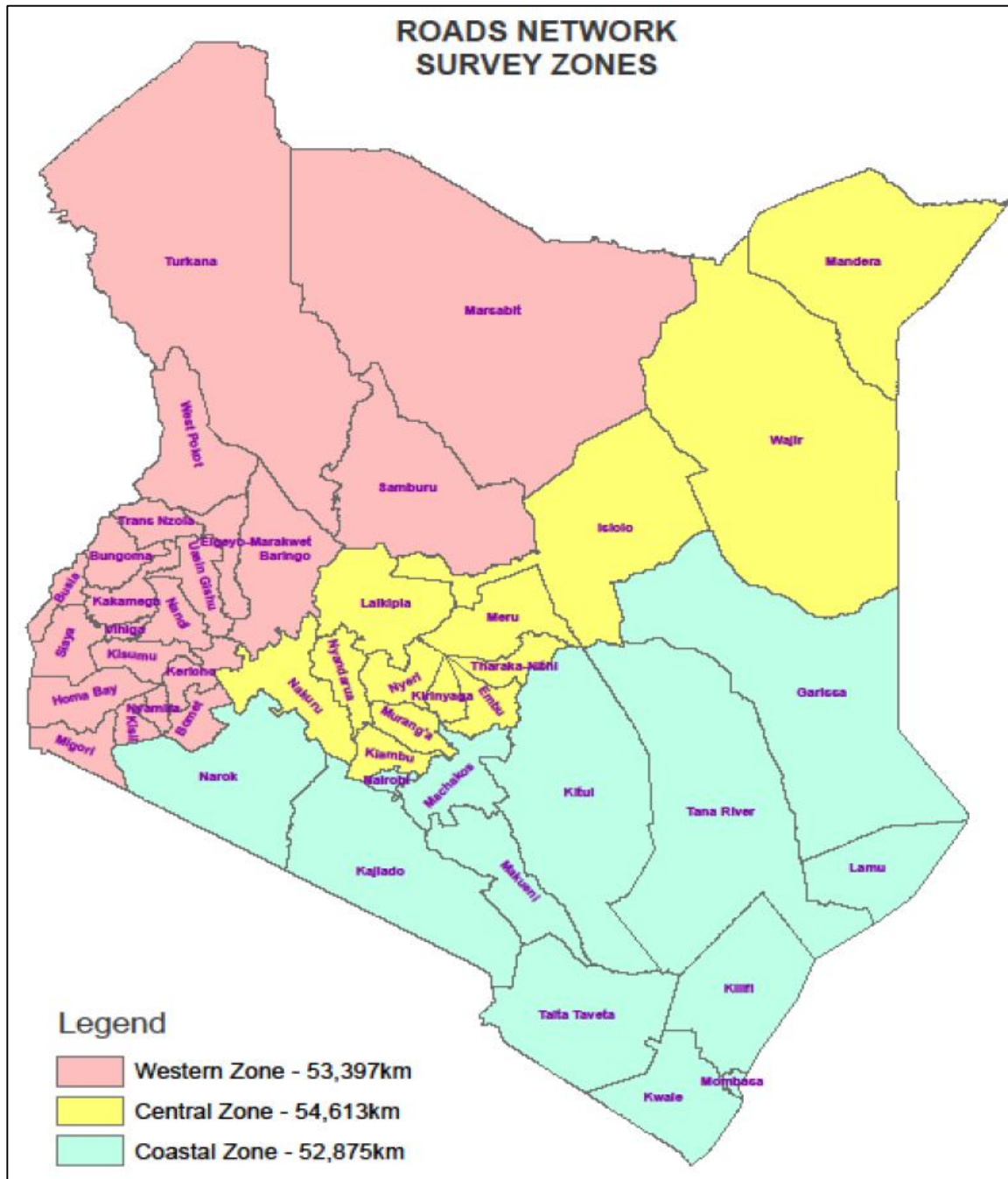


Figure 1-1: Road Network Survey Zones

## 1.6. Deliverables under the Contract

The table below shows the deliverables indicated in the Consultant's Technical proposal and as called for in the Terms of Reference.

Table 1.3: Deliverables under the Contract

No	Report Description	Submittal Date (Months)	
		Duration after contract effectiveness	Number of Copies
1	Inception Report	1.0 months	30
2	Monthly Progress Reports	By 5 <sup>th</sup> of every month	5
3	1st Interim Road Register for at least 10,000 km of Narrow Roads	4.0 months	1
	1st Interim Road Register with updated road conditions for at least 18,000 km of Classified Roads in the Zone	4.0 months	1
4	2 <sup>nd</sup> Interim Road Register for at least 20,000 km of Narrow Roads	8.0 months	1
	2 <sup>nd</sup> Interim Road Register with updated road conditions for at least 36,000 km of Classified Roads in the Zone	8.0 months	1
5	Working Paper on Rural population living within 2 km of all-weather roads	9.0 months	30
	Draft Road Condition and Inventory data collection and update framework for Classified Roads	9.0 months	30
6	Final Road Condition and Inventory data collection and update framework for Classified Roads	11.0 months	30
7	Final Roads Register for entire Narrow Roads Network in the Zone	12.0 months	1
	Final Road Register with updated road conditions for all Classified Roads in the Zone	12.0 months	1
8	Draft Road Inventory and Condition Report	12.0 months	30
9	A set of book of Maps (hard copy) for Narrow Roads covering the entire Zone, at appropriate scales for the roads and other content as agreed with the Client	12.0 months	100
10	Road Inventory and Condition Data Collection Manual for Narrow Roads	12.0 months	80
	Road Inventory and Condition Data Collection Manual for Classified Roads	12.0 months	80



No	Report Description	Submittal Date (Months)	Number of Copies
11	Final Roads Inventory and Condition Report	14.0 months	30

However, following further discussions with the Client, the Consultant proposed a revision of the deliverables listed under Items No. 7 to 11 as listed in the Table 1.4 Below. This was reviewed and approved by the Client vide a letter Ref. KRB/PP/32.32/A VOL. I(10) dated 6<sup>th</sup> June 2017.

Table 1.4: Revised Schedule of Deliverables

No.	Content in the TOR	Deadline in TOR	Consultant's Proposed Amendments
2	Monthly Progress Report	By 5 <sup>th</sup> of following month	No amendments.
6	Final Road Condition and Inventory data collection and update framework for Classified Roads This report shall incorporate the Client's comments	15.07.2017	No amendments.
7	7.1 Final Roads Register for entire Narrow Roads Network in the Zone 7.2 Final Road Register with updated road conditions for all Classified Roads in the Zone	15.08.2017	To be replaced with a Draft Final Road Register Report with the set of book of maps for all roads (not Narrow Roads only) as an Annex of the report.  (The report to document the data collection process used in the study and summarize the data collected including overall road conditions for the entire Narrow Roads and Classified roads in the zone)
8	Draft Road Inventory and Condition Report. The report shall document the data collection process used in the study and summarize the data collected including overall road conditions for the entire Narrow Roads and Classified Roads in the Zone	15.08.2017	
9	A set of book of maps (hard copy) for Narrow Roads covering the entire zone, A3 size at appropriate scales for the roads and other content as agreed with client. Soft copies to be provided in ArcGIS map format and PDF format	15.08.2017	
10	10.1 Roads Inventory and Condition Data Collection Manual for Narrow Roads 10.2 Roads Inventory and Condition Data Collection Manual for Classified Roads NB: The manuals will be based on the	15.08.2017	No amendments.

		actual data collection methods used and lessons learnt. The manual shall detail step by step guidelines and procedures for undertaking future road condition and inventory surveys for both classified roads and narrow roads		
11		Final Road Inventory and Condition Report.	30.04.2018	No amendment.

### 1.7. Purpose of the Final Road Register Report

The purpose of this Final Road Inventory and Condition Survey report is to:

- Document the approach and methodology used to undertake Road Inventory and Condition Survey for Western Zone,
- Provide the Client with full details of the Consultant's work completed for the Contract,
- Provide a details of all the Narrow Roads surveyed in the zone,
- Provide a detailed Road Register with updated road condition for all Classified Roads covered in the zone,
- Provide the road lengths of Narrow Roads, Gravel Roads and Earth Roads and Paved Roads,
- Record the condition of the Narrow Roads, Gravel Roads and Earth Roads and Paved Roads,
- Record the lengths of Narrow Roads for various widths of road reserve,
- Provide details of drainage structures in terms of their condition and quantities,
- Provide maps containing the surveyed roads,
- Provide statement on other deliverables included Rural Access Index, RICS Data Collection and Update Framework for Classified Roads and RICS Data Collection Manual for Classified and Narrow Roads.
- Document any challenges encountered and mitigation measures considered by the Consultant during the Contract.

## 2. APPROACH AND METHODOLOGY

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### 2.1. Approach

This section outlines the approach and methodology of undertaking the Road Inventory and Condition Survey field work with the subsequent processing and analysis of the resultant data in the office culminating in the reporting and development of maps required as deliverables to the Client.

#### 2.1.1. General

The Road Inventory and Condition Survey work was carried out concurrently in 3 zones covering the entire country with SMEC International Pty Ltd., in association with KIRI Consult Ltd., responsible for the Western and Central Zones. This section outlines the approach used for the Western Zone.

The GIS data for the zone included some 50,000 GIS records, one record for each road link. The unique identifier for each road link was a sequential GIS OBJECTID.

The data collected included the following:

- (a) Narrow Roads (Roads with road reserves less than 9m in addition to the current Classified Road Network); these formed a new road geometry added to the exiting KRB GIS data.
- (b) Earth Roads; these were the existing classified Earth Roads. This network also included roads that were formerly gravel roads that deteriorated (by losing the gravel) to earth roads.
- (c) Gravel Roads; these were existing classified gravel roads. This network also included roads that were formerly Earth Roads that had been upgraded to gravel roads as well as new "Narrow Roads" that were not previously included on the classified road network but were constructed since 2009.
- (d) Paved Roads; these were existing classified paved roads. They also included roads that were formerly earth or gravel roads that were upgraded to paved roads as well as new "Narrow Roads" that were not previously included in the classified road network but were constructed since 2009.

#### 2.1.2. Planning

##### 2.1.2.1. Team Composition

Data collection team was established. This team comprised:

- (a) A Team Leader for the zone: The Team Leader provided overall coordination of the data collection exercise as well as Client liaison.
- (b) Mapping/GIS/GPS Expert for the Zone: The duties of this Expert were to manage data quality and to ensure production.
- (c) RICS expert who provided technical assistance and advice.

- (d) Senior Engineer who provided technical assistance and coordination to the field raters and ensured quality of data collection/analysis process.
- (e) GIS Specialist whose duty was to process the data received from the field and advise the Mapping/GIS/GPS Expert about the quality of the data as received and processed.
- (f) Two Supervisors who coordinated the data collection exercise and digitally forwarding data to Head Office on a daily basis.
- (g) Ten (10) raters who were assigned the duty of data collection using Mobile Mappers and relaying the information to the Supervisors at the end of each day.
- (h) About ten (10) field workers recruited locally in each county, except in Samburu, Turkana, Baringo, West Pokot and Marsabit owing to insecurity incidences, to assist in the identification of locations of Narrow Roads and confirmation of road names as obtained from the local populace through these workers.
- (i) Three (3) GIS Operators, stationed in the Head Office, with the duties of processing and consolidating the data received to meet the ultimate project requirements.

The data was collected per County based on the constituencies in order to manage progress.

#### **2.1.2.2. Data Dictionary**

The data dictionary as used in the 2009 RICS formed the basis on which the 2016/2017 RICS data dictionary was tailored. The process of preparation of the data dictionary involved, first of all, the consideration of the various road types as the backbone features which constituted the GIS dataset to be collected. The roads picked and classified following the 2009 RICS exercise were broadly listed by the surface types including Gravel, Paved and Earth Roads. The roads list in the 2017 RICS data dictionary was modified to include roads which were not captured in the 2009 KRB RICS database. These were included in a class termed 'Narrow Roads' and comprised roads with all surface types including Gravel, Paved and Earth Roads; just as for the Classified Roads.

The second step was to identify the particular attributes whose data values were to be recorded and whose attributes were associated with the roads as the main features, either jointly or discretely. These attributes included quantifiable items such as road width, road reserve width, carriageway width and qualitative condition items such as road surface condition (whether potholed, smooth, stony or rough). Other qualitative attribute items included the road side drains, their availability, locations and conditions. Associated drainage features, such as bridges and culverts, were also identified as items of interest and their attributes developed. These included Quantifiable/measurable attributes like lengths, heights (for bridges), widths and qualitative attributes such as flow conditions and structural soundness.

Crossing features such as rivers and features abutting the roads were considered and the various attributes to be collected were selected. These features also included institutions

and facilities adjacent to the road or at the end of the road. They were determined as they were considered important for their value in highlighting the service level of the road. Towns along the roads also had attributes developed for their data collection.

Subsequently, identification process was deemed complete. All the Consultants met with KRB and agreed on what items of the data dictionary were to be included in the study and which ones were to be excluded per attribute per feature. Thereafter, a harmonized Data Dictionary, included in Appendix 4 of this report, was arrived at and circulated for adoption by the Consultants. There was to be no addition or exclusion of features or attributes in the final harmonized data dictionary that was circulated.

### **2.1.2.3. Equipment and Maps**

The team used the Mobile Mapper Office Software to preview and prepare background maps which were then loaded onto the Mobile Mapper data logger, Constituency by Constituency and County by County. The background maps once loaded onto the Mobile Mapper data loggers were then opened using the on-board Mobile Mapper Field software. The Mobile Mappers had Open Street Maps (OSM) and Satellite Imagery on which the loaded shapefile maps appeared as overlays.

The field teams also had Print Maps showing all the RICS 2009 classified roads and towns, Constituency by Constituency or County by County as was necessary. Together with the preloaded background maps on the Mobile Mappers, these gave complete guidance and assistance for self-location of the field survey teams during site inspections when identifying Narrow Roads, Classified Gravel Roads and Classified Earth Roads.

### **2.1.2.4. Introduction Correspondence**

During initial stages of the assignment, Kenya Roads Board issued letters to County Officials including the Police, County Commissioner, County Secretary, KeNHA, KURA, KeRRA County Leaders and KWS directors in each county informing them of the assignment given to the Consultant in Western Zone. In these letters, KRB asked the County Officials to assist the Consultant's team members as would be necessary to undertake the data collection assignment. These letters were supplemented by the Consultant's letters written to the same county leaders emphasizing the same need for this assistance.

### **2.1.2.5. Meetings**

#### **(a) Entry and Exit Meetings**

Under the guidance of the Team Leader, and prior to commencement of data collection in each county, the field team held a County Entry Meeting to inform the County Leaders and Road Agencies of the data collection assignment and to seek their cooperation and local knowledge.

At the end of the scheduled field activities in each county, the Consultant's team also convened an Exit Meeting to thank the County Officials for their assistance and also inform them of the status of the data collection exercise, as well as inform them of any challenges faced during the assignment in the county.

**(b) Consultative Meetings**

Consultative meetings, as was necessary, were held with the Kenya Roads Board for clarifications on certain matters and areas of concern such as insecurity. Progress of the assignment including fieldwork and office data processing were discussed during such meetings. Records of these meetings were circulated for follow ups.

**(c) National Steering Committee Meetings**

Kenya Roads Boards scheduled four meetings of the National Steering Committee which had been constituted with representation from Road Agencies, relevant Ministries and stakeholders. The meetings were held on 08 March 2017, 31 May 2017, 29 September 2017 and 16 March 2018. Records of these meetings were compiled and submitted to KRB as minutes for subsequent follow up with requisite actions.

### **2.1.2.6. Progress Monitoring**

The Team Leader, prepared a programme showing the activities to be undertaken in each County, Constituency by Constituency, and over specific periods. This programme was handed over to the Field Supervisors for their logistics planning. The supervisors, at the end of each county, reported back to the Team Leader with details of the achievements, and any challenges they faced, when using this programme.

## **2.2. Methodology**

### **2.2.1. Narrow Roads**

#### **2.2.1.1. Inspections**

During fieldwork, the team members first entered their designated initials onto the Mobile Mappers assigned to each one of them. They also loaded the shapefiles of the Classified Road Network from the RICS 2009 exercise, Constituency-by-Constituency, onto their Mobile Mappers. They then moved to designated beginning junction of each road link to be rated and began observing conditions of the roads until the end of the road as per its existing length.

A series of attribute information details including GPS location data and geo-tagged images were recorded as per the data dictionary, section-by-section, as the road condition changed.

A provision was made for Classified Roads which had changed status in terms of road lengths or surface types (for example, a road that was previously an Earth or Gravel Road might have become gravel or paved road respectively) and such changes were thus recorded. Where a road status (specifically "Surface Type") had changed, a geo-referenced image showing the changed status was also taken and recorded.

The Narrow Roads field rater also took photographs at the beginning and end of each link of road, recording thus their junctions with the Classified Road Network at the turn-off approaches and their ends. In addition, where any exceptional circumstances were observed



on the Classified Road Network, geo-referenced photographs were taken under the heading “Maintenance Condition” on the Mobile-Mapper.

When the field rater reached the start of a Narrow Road, a Geo-Referenced photograph was taken with the Mobile-Mapper. Field raters ensured that the Mobile Mapper had obtained a coordinate fix before taking the photograph.

The Field rater then travelled along the road and inspected features including all culverts, bridges, facilities and railway crossings along the way, taking at least two photographs of each culvert and bridge as well as photographs of the road. This was at least one near the midpoint of the road to obtain a clear view of the road. Field raters ensured that photographs showed sufficient context and they were not zoomed too closely to the subject matter.

When the Field Rater approached the end of the road, a photograph was again taken at a distance varying from 25 to 50 m from the end. The photograph showed the road itself as well as the reason for the road ending. In some cases, more than one photograph were taken to show the road end-point and associated reasons for terminating the inspection.

#### **2.2.1.2. Data collection**

The survey team carried out the detailed Inventory and Condition Survey for Narrow Roads using Spectra Precision Mobile-Mapper 50 4G (MM50) having Mobile Mapper Field software, with the defined data dictionary approved by the Client as described under Item 2.1.2.2 above.

Geo-referenced background maps showing the Classified Road Network, towns, facilities and any other features that were collected during the previous RICS study were loaded onto the Mobile-Mapper to assist the survey teams to know their actual locations as they collected the data on Narrow Roads. Additionally, the MM50 had Open Street Maps (OSM) by default and Satellite Imagery in the background for further assistance/guidance to the site staff during inspections. This ensured that there were no gaps left during collection of data.

Each member of the survey team was assigned a Constituency within the County with the Constituency boundaries also loaded onto the MM50 along with the Classified Roads within the Constituency in order to avoid duplication of data collected in the field. As the survey progressed, the geo-referenced background maps were continuously used as a real-time guide, with the analysed data in the form of overlying lines and attributes (“Shapefiles”) stored so as to ensure that the survey team did not leave any Narrow Roads or surveyed any Narrow Roads twice or several times.

#### **2.2.1.3. Data Transmission and Analysis**

At the end of each day, the Field raters returned to the base to transfer the inspection results to the Supervisor’s computer. At the same time the condition of all roads travelled over were discussed so that the supervisor obtained a good indication of the overall condition of the road network in the area. The print maps

were marked to show each Classified Earth Road link based on the inspector's observations of roads over which they travelled. All road type changes, including new Gravel Roads and new Paved Roads, on the Classified Road Network were recorded on the Mobile Mappers.

The supervisor ensured that all newly graveled Classified Roads, previously Earth Roads, were subsequently inspected by the gravel road inspection team, using Mobile Mapper , while all recorded sections of newly paved roads were passed on to the Mapping/GIS/GPS Expert to forward to the Paved Roads inspection team.

The Supervisor transmitted a ".zip file" of the data to the Head Office for storage on the server as raw data using the 'Constituency', 'County' and 'Date' collectively as the primary identifiers for the collected data on the server.

The GIS operators copied the Raw Data to their local machines and edited the shapefiles to produce a merged and integrated map of all the roads surveyed for each day in each county.

The grid developed by the Consultant's RICS Expert was used to edit the data received from the field to check if any narrow roads had been left out for the supervisors to be alerted for correction.

The GIS operators used the Google Earth Satellite imagery as background to check that road intersections were correct and that links had been correctly subdivided. When all the road shapefiles were merged for the day, all the roads in the shapefile were corrected for any outlier kinks in the Quantum-GIS (Q-GIS) software.

The other shapefiles were also merged into single files for each day per county. The result was in separate shapefiles, one for each Category of infrastructure as follows:

- (i) Narrow Earth Roads
- (ii) Narrow Gravel Roads
- (iii) Narrow Paved Roads
- (iv) Bridges
- (v) Culverts
- (vi) Railway Crossings
- (vii) Drifts
- (viii) Facilities
- (ix) Maintenance Problems
- (x) Institutions

The completed consolidated shapefiles were saved on the server and passed to the GIS Database Expert to consolidate with other County Shapefiles for each of the above infrastructure Categories.

When the data was forwarded to the Head Office (HO), the photographs taken were renamed using the Batch Renaming Utility (BRU). The renaming was made by Date, Month, Year and initials of the rater were appended to make each image unique.

The photographs were also Geo-tagged using EXIF Reader Software to know the location of a particular photograph and to relate it to the object that was photographed.

The photographs were resized to “Small 2560 x 1920”, before adding them to the county folder in order to reduce their footprint on storage since each image taken was at least 5MB and there were thousands of such images per County.

Finally, the output file with the coordinates of each photograph was saved as a shapefile and stored on the same folder as the photographs.

The photographs on the county folder were copied to external drives for the Technical Coordinators to view on their computers together with the other GIS information.

The technical coordinators reviewed the County data on a daily basis to assess the quality of the data and ensured that the photographs provided adequate representation of the inspected features.

The technical coordinators also monitored the progress across the county by daily assessing statistics of the length of new roads added and coverage across the county and reported this to the Team Leaders.

When inspection of a county’s roads was complete the Technical Coordinators obtained the Supervisor’s previously printed Classified Roads hard-copy maps with all of the Inspectors’ and Supervisors’ comments on the conditions of the roads as well as details of any newly paved and gravelled roads. In particular, they assessed the conditions of Earth Roads and filled in Inspection Forms for Classified Roads that had photographs based on the photograph and the Inspector’s rating for the road that was marked on the map. They ensured that the resulting length of roads rated was around 5% of the County’s earth roads in total. This provided a basis for discussion of the earth road conditions with the County Authorities Engineers.

#### **2.2.1.4. Classification and Naming**

The technical coordinators assigned road numbers and classes to all the Narrow Roads that were being added. Contiguous roads were assigned the same number with links from intersection to intersection.

The procedure for numbering all Narrow Roads and Newly Constructed roads was a multi-stage process briefly described below.

- (i) All New Roads Data preliminary topology editing was completed.
- (ii) All the New Roads files for a County were then merged together into a single file.
- (iii) New Columns were then introduced into the Attribute Table entitled “Object ID” and “Route Number”. “RoadNum” column which already existed in the table as per the Data Dictionary was blank for the Newly Picked Roads until filled up in the exercise under description.
- (iv) Each rated road segment was then assigned a unique “ID number” to represent the segment picked. The process was sequential in the attribute table beginning with ID Number 000001 up to the last possible number.
- (v) Once each road segment was sequentially assigned a “Unique ID”, a Manual & Visual Process ensued to assign each road segment a “Route Number”. For

segments of the same road, a similar route number was assigned. This was important because it was from this “Route Number” that the “Road Number” arose. Therefore, each single road contained only segments with the same route number. The total number of Routes arising consequently corresponded directly to the total number of complete roads surveyed.

- (vi) Each Road was then classified as per the Road Classification Manual given by KRB as shown in the table below.

No.	Road Reserve Width (m)		Road Surface Type	Assigned Class to New Road
	From	To		
1	9	40	Gravel Road	E
2	9	20	Earth Road	G
3	21	40	Earth Road	F
4	9	40	Paved Road	D
5	<9		All Surface Types	NR

- (vii) For each of the New Road of Earth, Gravel or Paved Surface Type falling within the range of 9m to 40m of Road Reserve and the Assigned Classes “E”, “G”, “F” & “D” as given above was then numbered in the sequence of:

“Road Class\_County Number\_N\_Route Number” in that order,

*So that the following, as examples, resulted:*

- “E\_39\_N\_213” referring to a New Road in Bungoma County (39) with a Gravel Surface and measuring from 9 to 40m of Road Reserve,
- “G\_44\_N\_120” referring to a New Road in Migori County (44) with an Earth Surface and measuring from 9m to 20m of Road Reserve,
- “F\_42\_N\_001” referring to a New Road in Kisumu County (42) with an Earth Surface and measuring from 21m to 40m of Road Reserve, and
- “D\_10\_N\_001” referring to a New Road in Marsabit County (10) with a Paved Surface and measuring from 9m to 40m of Road Reserve

The letter “N” in the number above denoted “New” for the new road under that class.

- (viii) For Each New Road of any Surface Type and which falls within a range of Road Reserve and Class “NR” above was then numbered in the sequence of:

“NR\_County Number\_Route Number” in that order,

*So that the following, as examples, resulted:*

- “NR\_39\_213” referring to a New Road in Bungoma County (39) with a Road Reserve measuring < 9m,
- “NR\_44\_120” referring to a New Road in Migori County (44) with a Road Reserve measuring < 9 m,
- “NR\_42\_001” referring to a New Road in Kisumu County (42) with a Road Reserve measuring < 9 m, and
- “NR\_10\_001” referring to a New Road in Marsabit County (10) with a Road Reserve measuring < 9 m.

#### **2.2.1.5. Final Consolidation**

All road shapefiles, merged per County, and the road shapefiles were merged together and this was in turn merged with the KRB roads for the zone. The other infrastructure shapefiles were retained per county.

During the data analysis, the Consultant’s personnel assigned numbers to the Narrow Roads as NR\_04\_350 where NR referred to Narrow Road, 04 was for the County Number, as constitutionally given in the National Records, and 350 designated the road unique numerical value within the county. The new roads and existing roads as well as new inspected ones were integrated on existing database.

#### **2.2.2. Gravel Roads**

##### **2.2.2.1. Inspections**

The field raters entered their designated team initials in the Mobile Mappers allocated to them and drove over the allocated routes to the Gravel Roads scheduled for inspection. Any newly gravelled roads identified along the way were also inspected.

Photographs were taken on all Gravel Roads at the point when the road section was rated as the road condition changed and at the road end. All inspections were preceded by recording the road numbering into the Mobile Mapper.

##### **2.2.2.2. Data Collection**

The method, described under Item 2.2.1.2 above, was also applied in the collection of updated Road Condition data for the Gravel Roads, where the lower version Mobile Mapper 20 (MM20) was sufficient in capturing the existing road conditions of the Classified Gravel Roads. The MM20 also used background map data input from the previous RICS Survey 2009 and updated the information in real-time as the data collector moved along the road collecting data.

##### **2.2.2.3. Data Transmission and Analysis**

The field raters returned to their base and transferred the Mobile Mapper data to the Supervisor’s computer. They also discussed the roads inspected and marked up

the Gravel Roads on the hard copy maps. They also reported on any Classified Roads that had been newly paved since the 2009 data collection.

The supervisor transmitted the data to the Head Office as well as a list of newly paved roads that were located.

The data was reviewed by the GIS team to check consistency with the existing KRB shapefile data. The shapefile for all the roads inspected for that day were merged together by the GIS team and stored on the server. Subsequently, all the daily data was merged County-by-County by the GIS team.

Finally, the merged Gravel Roads data was joined to the KRB roads shapefile using the road numbering.

### **2.2.3. Classified Earth Roads**

#### **2.2.3.1. Rating**

The team undertook data collection on a representative sample of 5% of the Classified Earth Roads in each County as per the Terms of Reference. The minimum total length of Earth Roads rated per county was computed as follows:

$$L_5 = (5 \times P)/100$$

Where;

$L_5$  represented 5% of the Earth Roads by length in kilometres, and  
 $P$  represented the total length of all Earth Roads within a particular county as obtained from the KRB 2009 RICS data.

For a random but systematic approach of rating, the calculated Earth Roads length ( $L_5$ ) for each county was adopted.

As an example; if the given total length of earth roads in Bomet County from the RICS 2009 was 842.25 km and in order to fulfill the requirements of the ToR, the minimum length rated for Bomet County was

$$\begin{aligned} L_{5 \text{ BOMET}} &= (5 \times 842.25)/100 \\ &= 42.11 \text{ km} \end{aligned}$$

In addition to the visual rating undertaken by Consultant's field teams, information about the condition of Earth Roads was requested from Constituency Roads Officers (CRO's), working in the KeRRA County offices, to assist the Consultant with the Desktop rating/study of the earth roads.

Prior arrangements were made for the entire list of Earth Roads in each county to be prepared and printed as per the RICS 2009 data obtained from the Client and columns provided to assist in capturing the conditions on drainage, surface quality and road usage from the CROs knowledge of each of the roads under their jurisdiction.

The information the CROs provided further increased the number of kilometres "rated" for each County on Earth Roads. A sample of what was obtained from Nyamira County CROs was as shown in the table below.



Table 2.1: Earth Roads Rating by CROs

Length (km)	Road Type	RID_8	RoadName_0	ConstitNm	Road usage	Surface Condition	Drainage Type	Drainage Location	Drainage Condition
0.23	Earth	B5	B2 Kendu Bay-A1 Kadongo-Nyamira-B4 Siamani-B4 Kebirigo-B6 Keroka-B3 Nyangusu	Bobasi	Busy	Fair	Unlined	Both sides	Fair
2.19	Earth	C896	Bendere Friends	Bobasi	Busy	Fair	Unlined	Both sides	Fair
0.07	Earth	C896	Bendere Friends	Bobasi	Busy	Fair	Unlined	Both sides	Fair
0.37	Earth	C896	Bendere Friends	Bobasi	Busy	Fair	Unlined	Both sides	Fair
0.60	Earth	C896	Bendere Friends	Bobasi	Busy	Fair	Unlined	Both sides	Fair
0.37	Earth	C896	Bendere Friends	Bobasi	Busy	Fair	Unlined	Both sides	Fair

Using the QGIS software, a procedure of “joining” the data obtained from the CROs was then performed in order to attach the condition attributes to the original KRB RICS 2009 data in order to update them. This only applied to all Earth Roads that had remained earth since the last RICS (2009) was carried out, otherwise the upgraded roads were mapped as either gravel or paved as found during the data collection. This procedure yielded a significant amount of information on all Earth Roads within each county. Using adjacency estimations (Nearest-neighbour method), the conditions of the remaining possibly unrated Earth Roads were then deduced through averaging the “nearest neighbours” conditions to complete the Earth Roads conditions picture.

For information on major structures on Earth Roads, the visual rating had been conducted in the field by visiting the very structure and visually assessing and recording their condition. This applied to drifts, bridges and box culverts on Earth Roads.

#### 2.2.3.2. Earth Roads Rating Challenge

The field team encountered a few issues during the rating of Earth Roads. The Road Agencies within the Counties that were to provide the necessary guidance for this exercise were most of the times committed with other assignments. As such, the Earth Roads rating in some counties delayed. However, this was resolved by the field team getting back to the Constituency Road Officers of KeRRA, after data collection in all the other counties, for the requisite Earth Roads rating.

#### 2.2.4. Classified Paved Roads

##### 2.2.4.1. Inspection of Structures

The inventory and condition survey for structures on paved roads was undertaken by one data collection team comprising 2 No. field raters.

A Mobile Mapper was used to record and collect the data for structures as per the data dictionary approved by Kenya Roads Board as detailed under Item 2.1.2.2 above. Inspection of structures was carried out on County-by-County basis.

The Mobile Mapper was preloaded with background maps consisting of Paved Roads of the 2009 RICS. The field raters were also equipped with hard copy county maps consisting of Paved Roads to enable them identify their location while undertaking the study and while ensuring that all roads, including newly upgraded Paved Roads, were surveyed within the county.

While collecting inventory and condition data for structures on paved roads, the field raters took photographs as customized in the Mobile Mapper and as detailed below:

- **Bridges:** Bridge approaches, Bridge inlet and outlet
- **Box culverts, drifts and pipe culverts:** culvert inlet and outlets.

All inspections were preceded by recording the road numbering into the Mobile Mapper.

#### 2.2.4.2. FWD Data Collection

##### (a) Sub-Contract

Collection of condition data on Paved Roads was sub-contracted to the Materials Testing and Research Division of the Ministry of Transport, Infrastructure, Housing and Urban Development. This entailed a test method that defined the procedure for measuring the deflection response of road pavements using an equipment referred to as Falling Weight Deflectometer (FWD).

*Falling Weight Deflectometer is a vehicle-mounted or towed device that records pavement surface deflection bowls at discrete test points on the pavement surface. Surface deflections are measured at distances ranging from 0 mm to a user-defined maximum (2,100 mm) from the centre of an impulse test load.*

*The load is applied to the pavement surface through a standard loading plate, normally 300 mm in diameter, by a falling weight with a variable drop height while the FWD is at rest.*

*The details of equipment specification and checks on the performance of the equipment, calibration, test load, sensor spacings and reporting formats as obtained from the international standards are as given in Appendix 3 of this report.*

##### (b) FWD Data Processing and Calculations

Deflection measurements were conducted using impulse type deflection equipment. The equipment met the requirement of ASTM D4694, 2009 and ASTM D 4695, 1996.

Deflection measurements were made on outer lanes at intervals of approximately 1.0 km on the outer wheel path (OWP). At each drop point, readings were taken for the nine (9) consecutive geophone points of 0, 20, 30,

60, 90, 120, 150, 180, and 210 cm. The parameters recorded during a FWD test included GPS location, linear reference, deflection readings, test temperature, test load and pulse time as indicated below depicting raw FWD file.

Table 2.2: FWD File

```

$2
(chainage[m])..... 200
Lane..... LHS
Pavement description... ASPHALT
Remarks..... OAK TREE SCHOOL ON THE LHS
Position of Drop: Longitude: East 36°58'0.82", Latitude: South 1°26'14.44", Altitude: 0.8 m
-----
$3
Sequence: 1/1 No. of drops: 2 Fallheight: 108 Time: 12:03
Drop D(1) D(2) D(3) D(4) D(5) D(6) D(7) D(8) D(9) kPa kN Air Sur. Man. Pulse time
1 102 81 72 51 45 41 30 21 17 681 48.14 33.4 31.2 49.5 26.26
2 100 80 71 50 45 41 30 22 18 660 46.63 33.4 31.3 49.5 26.15

```

The deflection sensor readings of the final loading cycles was adjusted to estimate the deflection readings that would result from a load level exactly equal to the target load level. This process was usually called ‘normalizing’. The normalized deflections were determined using the following equation:

$$d_n = \{d_i \times L_t\} / \{L_i\}$$

Where  $d_i$  was the deflection reading for the sensor located  $i$  mm from the centre,  $d_n$  was the normalized deflection reading for the sensor located  $i$  mm from the centre,  $L_i$  was the load level applied during the test and  $L_t$  was the target load level of 707 KPa based on the standard axle of (50-KN), 10-ton.

Deflection geophone details were labelled as per the table below.

Table 2.3: Deflection geophone Details

Geophone by offset	D <sub>0</sub>	D <sub>200</sub>	D <sub>300</sub>	D <sub>600</sub>	D <sub>900</sub>	D <sub>1200</sub>	D <sub>1500</sub>	D <sub>1800</sub>	D <sub>2100</sub>
Geophone by position	D1	D2	D3	D4	D5	D6	D7	D8	D9
Normalized data geophone naming	ND1	ND2	ND3	ND4	ND5	ND6	ND7	ND8	ND9

FWD data in *notepad fwd format* is opened using *xls* and then saved in *xls format*. Basic analysis by normalization is conducted on the collected data in view to report all deflections in a standard pressure of 707 KPa of 50KN load in order to simulate a dual wheel assembly of 10-ton as stated above.

### (c) FWD Data Reporting

The data collected and reported for each location included the following:

- Location of the test point with regard to the specified location reference system;
- Target load level and impact peak load measured during the final (i.e. third) loading cycle;
- Pavement deflection measured at each of the deflection sensors during the final loading cycle;
- Normalized pavement deflections for each of the deflection sensors

- corresponding with the final loading cycle;
- Ambient air, surface and pavement temperature during the test

### 2.2.4.3. Roughness Data Collection

#### (a) Scope

*The Roughness Data Collection is a procedure that describes the operation, using a specialized piece of equipment called Laser Profiler, to determine pavement surface roughness. The procedure followed was as described in the Operators User Manuals for the Laser Profiler (Hawkeye 2000 Series) published by ARRB Group Ltd. There were frequent referrals to these manuals and so they were read in conjunction with this procedure. This publication included Safety Instructions, Calibration Instructions and Operating Instructions.*

The details including definitions, apparatus, materials, equipment checks, calibration, maintenance, validation and reporting formats relating to the roughometer are included in Appendix 3 of this report.

#### (b) Data Collection

The operation was set at a speed permitted for that section of road, but not less than 40 km/h and not greater than 95km/h, at a steady rate. The computer was activated at the commencement of the survey zone and any physical features that were to affect the riding quality were recorded. The records included any significant intersections, road and reference markers. Adequate lead-in and lead-out were observed at the start and end of each survey (e.g. 50m).

#### (c) Processing and Calculations

The processing of the roughness data survey was handled by the system software detailed in the ARRB Group manual 'Hawkeye Processing Toolkit, Data Viewer'.

### 2.2.5. Data Validation

Data validation, in the office, was conducted by processing and cleaning the fieldwork data received using QGIS. This was then compared with the original geo-data base received from the Client and Google Earth imagery.

A pilot validation, with already prepared maps, was conducted in Murang'a County of Central Zone and the findings and lessons learned were applied to the full validation in this county and the Counties in Western Zone. To effect this validation, maps were prepared and the field team visited the offices of the Road Agencies and held discussions with the latter.

The Road Agencies undertook to carry out the validation within the agreed time for the Consultant team to collect the comments after this agreed time. Upon completion of this validation, the comments as received from the Road Agencies were addressed prior to inclusion of the outcome in this report. Copies of validation forms, filled by the Roads Agencies, are included in Appendix 7 of this report.

Validation of the equipment for the FWD was undertaken in accordance with the

stipulated Austroads test method AG: AM/T005.

To ensure authentic data collection, validation of the roughometer equipment was undertaken in accordance with Austroads Test Method AG referred to as *AM/T003 Validation of an Inertial Laser Profilometer for Measuring Pavement Roughness (Loop Method)*.

## **2.3. Constraints**

### **2.3.1. Determination of Road Reserve Width**

During the process of determining and measuring the Road Reserve Widths, a number of features were encountered.

The features included fences, proximity of farm lands to the drainage edges and lines of trees. In most cases, fences were used to define the road reserve edges to arrive at the Road Reserve Width and in a few instances, the cut edge of the drainage side slope was the determining factor for the road reserve especially for Narrow Roads.

There were cases where the road passed through flat open land with no definite edges for the road reserve. The team considered the extreme outer edge of the tyre marks plus about 2 m, either side, for what would be the drain as the limit of the road reserve.

### **2.3.2. Road Naming and Numbering**

#### **2.3.2.1. Road Naming**

There were few challenges in naming of Classified Roads as appeared to be for the inventory of 2009. These included consistently one name for the road instead of the start and end to define the road. Attempts were made to obtain names of starts and ends of roads. These ended with a few cases still with one name for the road. The field team resorted to identifying permanent features at starts and ends of the roads but this proved unattainable, in certain instances, and as such ended up having some roads with one name.

The Consultant tried to assign specific names to Narrow Roads as obtained from local personnel although with difficulties as different people gave different road names for the same roads. To resolve this confusion, the Consultant used land marks such as schools, churches and village names for starts and ends of the roads. Such difficulties were ironed out during data validation with Road Agencies.

#### **2.3.2.2. Narrow Roads Numbering**

Numbering of Narrow Roads had initially proved difficult. After due consultations with the Client, it was agreed that:

- (i) For newly upgraded/constructed roads with the road reserve width of 9 m and above, a Road Number was to be assigned as X<sub>27</sub>N<sub>433</sub> where X represented

the Road Class, 27 stood for County National Code, N represented the Newly Constructed Roads and 433 stood for a unique numeral in the County.

- (ii) Narrow Roads were to be numbered as NR\_36\_220 where NR designated Narrow Road, 36 was for the National Code Number of the County while 220 represented a unique numeral of the road in the county.

### **2.3.2.3. Security Challenges**

The Consultant's work progress was affected by insecurity incidences in Baringo and Turkana counties. In particular, Baringo North, Baringo, South and Tiaty in Baringo county and Turkana East constituency in Turkana county. In addition, three classified roads were left out in West Pokot due to the same reasons.



## 3. FINAL ROAD REGISTER

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### 3.1. Fieldwork

The Consultant was able to cover all the 21 counties listed in the Western Zone except four constituencies: Baringo North, Baringo, South and Tiaty in Baringo county and Turkana East constituency in Turkana county which were omitted due to insecurity.

Approximately 53,131 km of the Classified Paved, Gravel and Earth roads were surveyed against the planned length of 53,603 km from the 2009 RICS. 99.1% of the network was therefore covered during the exercise.

The Narrow Roads length achieved in all the twenty one counties was 26,050 km versus the estimated (planned) length of 26,698 km making 97.6%. The achieved length of Narrow Roads with the Road Reserve width less than 6m was 3,503km about 13.5%. This was found to be less than the 30% limit noted in the ToR.

In total 79,181 km of the road network in Western Zone was surveyed.

A summary of the road network covered per county is shown in Table 3.1 below;

Table 3.1: Summary of the Road Length Surveyed

No.	COUNTY	LENGTH OF ROADS SURVEYED (Km)									Total Network Surveyed (km)
		CLASSIFIED ROADS			NARROW ROADS						
		Planned (km)	Actual (km)	%	Planned (km)	Actual (km)	%	≥ 6 m (km)	< 6 m (km)	% of ≥ 6 m	
1	Bomet	2,041.9	2,020.6	99.0%	1,021.0	1,842.8	180.5%	1,412.5	430.3	76.7%	3,863.4
2	Kericho	1,810.0	1,797.4	99.3%	905.0	2,501.9	276.5%	2,174.6	327.3	86.9%	4,299.3
3	Nyamira	1,136.5	1,140.3	100.3%	568.2	558.2	98.2%	477.8	80.4	85.6%	1,698.5
4	Kisii	2,232.6	2,216.6	99.3%	1,116.3	910.6	81.6%	762.8	147.8	83.8%	3,127.2
5	Migori	2,198.9	2,180.9	99.2%	1,099.5	1,786.8	162.5%	1,598.6	188.2	89.5%	3,967.7
6	Homa Bay	2,587.3	2,559.4	98.9%	1,293.7	1,681.7	130.0%	1,398.9	282.8	83.2%	4,241.1
7	Kisumu	2,726.0	2,712.5	99.5%	1,363.0	1,074.1	78.8%	970.7	103.4	90.4%	3,786.6
8	Siaya	2,165.4	2,109.9	97.4%	1,082.7	2,161.6	199.6%	1,952.2	209.4	90.3%	4,271.5
9	Busia	1,563.5	1,549.7	99.1%	781.8	1,683.7	215.4%	1,519.9	163.8	90.3%	3,233.5
10	Bungoma	2,705.2	2,681.3	99.1%	1,352.6	2,536.7	187.5%	1,887.2	649.5	74.4%	5,218.1
11	Kakamega	3,770.4	3,744.0	99.3%	1,885.2	1,548.3	82.1%	1,248.8	299.4	80.7%	5,292.2
12	Vihiga	753.8	744.0	98.7%	376.9	298.5	79.2%	278.4	20.1	93.3%	1,042.5
13	Nandi	2,516.2	2,491.5	99.0%	1,258.1	848.9	67.5%	804.5	44.4	94.8%	3,340.4
14	Uasin Gishu	4,155.3	4,167.9	100.3%	2,077.6	1,593.7	76.7%	1,520.1	73.6	95.4%	5,761.6
15	Trans Nzoia	1,823.9	1,808.5	99.2%	911.94	970.4	106.4%	765.5	204.9	78.9%	2,778.8
16	Elgeyo Marakwet	1,905.3	1,877.0	98.5%	952.7	318.3	33.4%	284.7	33.6	89.5%	2,195.3
17	West Pokot	2,000.5	1,969.2	98.4%	1,000.3	582.6	58.2%	499.4	83.2	85.7%	2,551.8
18	Baringo (part)	3,072.7	3,055.0	99.4%	1,536.5	774.6	50.4%	736.1	38.6	95.0%	3,829.6
19	Marsabit	4,862.5	4,799.1	98.7%	2,431.2	855.8	35.2%	806.7	49.2	94.3%	5,654.9
20	Samburu	2,475.2	2,430.8	98.2%	911.9	406.0	44.5%	379.8	26.18	93.5%	2,836.8
21	Turkana (part)	5,100.2	5,075.4	99.5%	2,772.8	1,115.0	40.2%	1,067.3	47.7	95.7%	6,190.4
	<b>Overall</b>	<b>53,603.2</b>	<b>53,131.1</b>	<b>99.1%</b>	<b>26,698.8</b>	<b>26,050.3</b>	<b>97.6%</b>	<b>22,546.5</b>	<b>3,503.8</b>	<b>86.5%</b>	<b>79,181.4</b>

## **3.2. Key Findings**

### **3.2.1. Road Surface Type and Condition**

The following chapter is a presentation of the key findings from the analysis of the fieldwork data.

In summary, 44.9% of all the Paved road network in the twenty one counties were found to be in Good condition, 45.9% were in Fair while 6.9% were in Poor condition. Only 2.2% were Under construction.

The fieldwork results also showed that 15.3% of all the Unpaved road network in the twenty one counties were in Good condition, 43.0% was in Fair while 40.3% was in Poor condition. Only 1.4% was under construction.

The fieldwork data have also been analysed and presented in various details as presented hereunder and in the appendices to this report.

Table 1A in Appendix 1 shows the overall summary of the Surface Type and Road Condition for the entire Central Zone.

Table 3.2 below shows a summary of the Paved road condition per county.

Table 3.2: A Summary of the paved road condition per county

COUNTY	SURFACE CONDITION: PAVED ROADS (%)				TOTAL LENGTH (Km)
	Good	Fair	Poor	Under Construction	
Bomet	51.21%	44.53%	4.26%	0.00%	207.037
Kericho	59.34%	33.84%	6.56%	0.26%	387.919
Nyamira	59.06%	36.53%	0.05%	4.37%	128.064
Kisii	48.18%	42.30%	6.60%	2.91%	342.374
Migori	52.58%	43.46%	1.94%	2.02%	216.054
Homabay	58.14%	37.57%	1.26%	3.04%	244.969
Kisumu	32.20%	49.24%	18.56%	0.00%	434.384
Siaya	42.22%	56.52%	1.26%	0.00%	368.832
Busia	61.43%	38.53%	0.04%	0.00%	167.435
Bungoma	24.99%	67.05%	7.96%	0.00%	251.387
Kakamega	26.18%	70.69%	2.72%	0.41%	281.177
Vihiga	49.94%	41.92%	8.13%	0.00%	153.542
Nandi	60.04%	34.91%	4.90%	0.14%	290.124
UasinGishu	43.97%	49.46%	5.25%	1.32%	469.771
Transzoia	23.35%	73.72%	2.93%	0.00%	197.157
ElegeyoMarakwet	79.43%	12.56%	5.52%	2.50%	204.04
WestPokot	34.07%	38.01%	11.12%	16.81%	182.171
Baringo	38.33%	54.12%	7.55%	0.00%	500.44
Marsabit	35.45%	64.03%	0.45%	0.07%	388.947
Samburu	97.41%	1.00%	1.59%	0.00%	111.552
Turkana	34.08%	30.94%	22.69%	12.29%	483.468
<b>OVERALL</b>	<b>44.89%</b>	<b>45.98%</b>	<b>6.93%</b>	<b>2.19%</b>	<b>6010.844</b>

Table 3.3 below shows a Summary of the Unpaved road condition per county.

Table 3.3: A Summary of the Unpaved road condition per county

COUNTY	SURFACE CONDITION: UNPAVED ROADS (%)				TOTAL LENGTH (Km)
	Good	Fair	Poor	Under Construction	
Bomet	7.71%	27.49%	64.00%	0.80%	3656.411
Kericho	13.51%	41.16%	43.94%	1.38%	3911.409
Nyamira	23.01%	40.75%	31.31%	4.93%	1570.467
Kisii	16.80%	43.70%	38.73%	0.76%	2784.863
Migori	19.44%	42.71%	36.40%	1.46%	3751.658
Homabay	14.84%	41.26%	42.99%	0.91%	3996.102
Kisumu	14.30%	37.82%	46.96%	0.92%	3352.211
Siaya	24.68%	45.54%	28.25%	1.53%	3902.713
Busia	19.70%	49.77%	29.76%	0.77%	3066.02
Bungoma	19.19%	34.74%	45.06%	1.01%	4966.689
Kakamega	27.38%	40.56%	29.82%	2.24%	5011.06
Vihiga	22.13%	58.18%	17.89%	1.80%	888.961
Nandi	13.24%	52.14%	33.43%	1.18%	3050.291
UasinGishu	22.23%	52.94%	24.15%	0.68%	5291.844
Transzoia	22.27%	48.33%	28.65%	0.75%	2581.689
ElegeyoMarakwet	16.99%	47.81%	32.74%	2.46%	1991.274
WestPokot	10.76%	43.65%	44.00%	1.58%	2369.618
Baringo	6.33%	33.36%	57.58%	2.73%	3329.151
Marsabit	3.81%	48.87%	47.08%	0.24%	5265.949
Samburu	6.83%	48.39%	41.74%	3.04%	2725.234
	<b>15.28%</b>	<b>43.01%</b>	<b>40.35%</b>	<b>1.36%</b>	<b>73170.589</b>

Figure 3.1 below shows the overall road condition per county.

Fig 3.1: Graph of Overall road condition per county

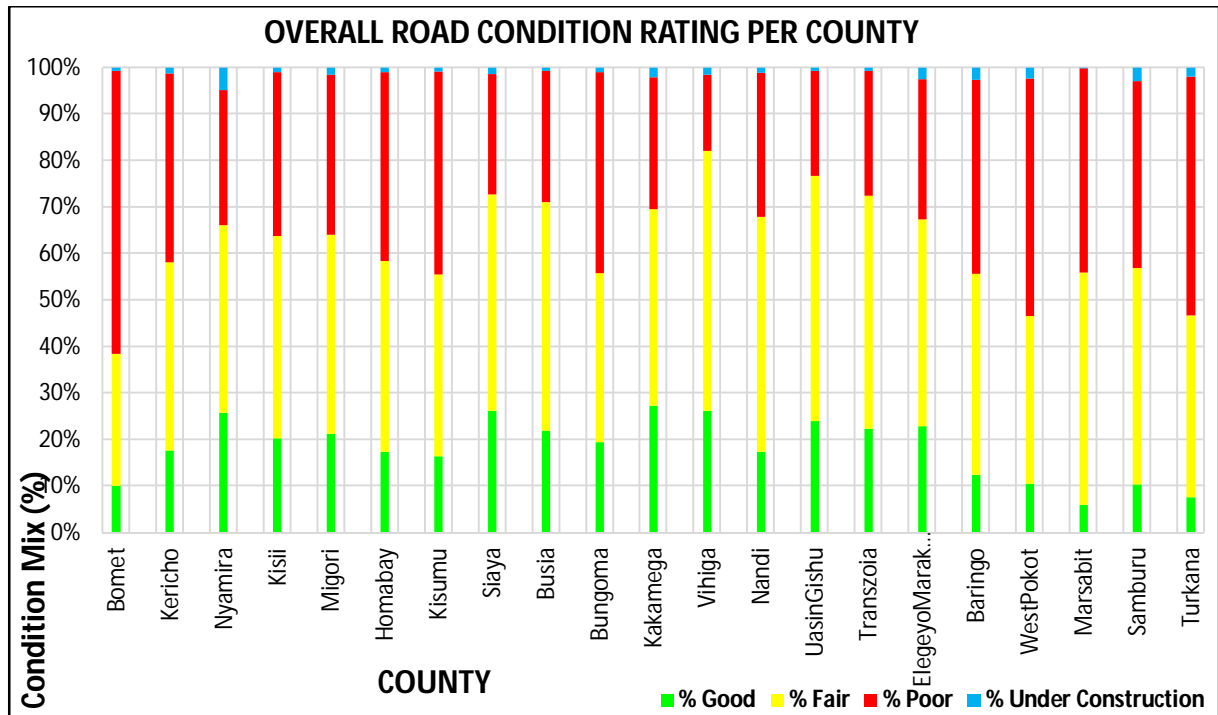


Table 1B in Appendix 1 shows a summary of the Surface Type and Road Condition per county.

### 3.2.2. Road Surface Type and Condition per Road Class

The fieldwork data has also been analysed and presented in terms of the Surface type and condition per Road class.

#### a) Overall Surface Condition per Road Class (Classified Roads)

Table 2A in Appendix 1 shows a detailed summary of the Surface type and road condition per road class for the Classified roads in the Western Zone.

The following Table 3.4 shows the overall road condition per road class for the entire Western Zone.

Table 3.4: A Summary of the Overall road condition per road Class (Classified roads)

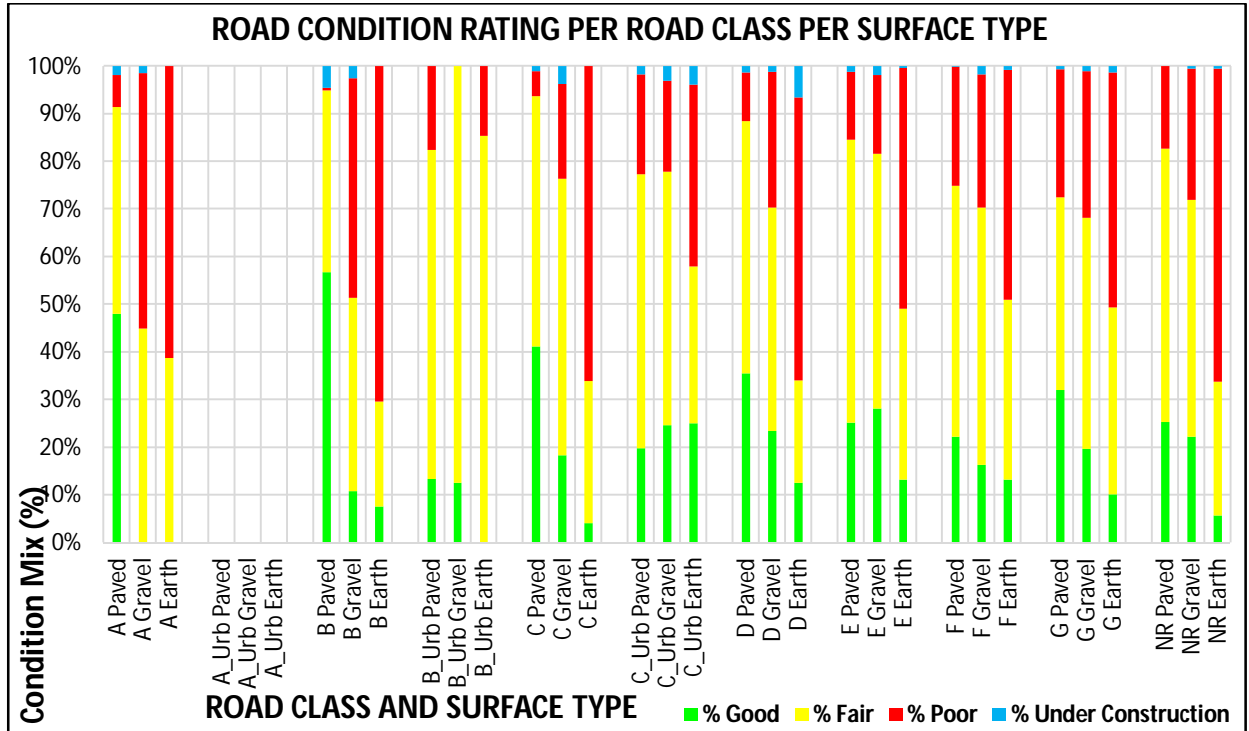
ROAD CLASS	ROAD LENGTH AND SURFACE CONDITION (Km)				TOTAL
	Good	Fair	Poor	Under Construction	
<b>A</b>	864.603	1161.259	652.371	40.138	2718.371
	31.81%	42.72%	24.00%	1.48%	100.00%
<b>B</b>	1126.2	1446.339	1287.348	114.696	3974.583
	28.34%	36.39%	32.39%	2.89%	100.00%
<b>B_urb</b>	6.327	34.536	7.478		48.341
	13.09%	71.44%	15.47%	0.00%	100.00%
<b>C</b>	1528.362	3887.482	1987.303	182.517	7585.664
	20.15%	51.25%	26.20%	2.41%	100.00%
<b>C_urb</b>	203.109	429.789	185.613	25.548	844.059
	24.06%	50.92%	21.99%	3.03%	100.00%
<b>D</b>	843.975	1624.428	1298.302	88.152	3854.857
	21.89%	42.14%	33.68%	2.29%	100.00%
<b>E</b>	2739.234	5366.473	2117.262	177.359	10400.328
	26.34%	51.60%	20.36%	1.71%	100.00%
<b>F</b>	535.631	1696.279	1148.625	48.957	3429.492
	15.62%	49.46%	33.49%	1.43%	100.00%
<b>G</b>	4329.983	13075.586	12607.818	375.256	30388.643
	14.25%	43.03%	41.49%	1.23%	100.00%
<b>NR</b>	1700.295	5512.909	8648.866	75.025	15937.095
	10.67%	34.59%	54.27%	0.47%	100.00%
<b>TOTAL (Km)</b>	<b>13,877.72</b>	<b>34,235.08</b>	<b>29,940.99</b>	<b>1,127.65</b>	<b>79,181.43</b>
<b>CONDITION (%)</b>	<b>17.53%</b>	<b>43.24%</b>	<b>37.81%</b>	<b>1.42%</b>	<b>100.00%</b>

Figure 3.2 below shows a graph of the overall road condition rating per road class per surface type.



Fig 3.2: Graph of Overall road condition per road Class per Surface type

Figures 3.3 and 3.4 below shows graphs of the overall road condition rating per road class



for Paved and Unpaved roads respectively.

Fig 3.3: Graph of Overall road condition per road Class (Paved Roads)

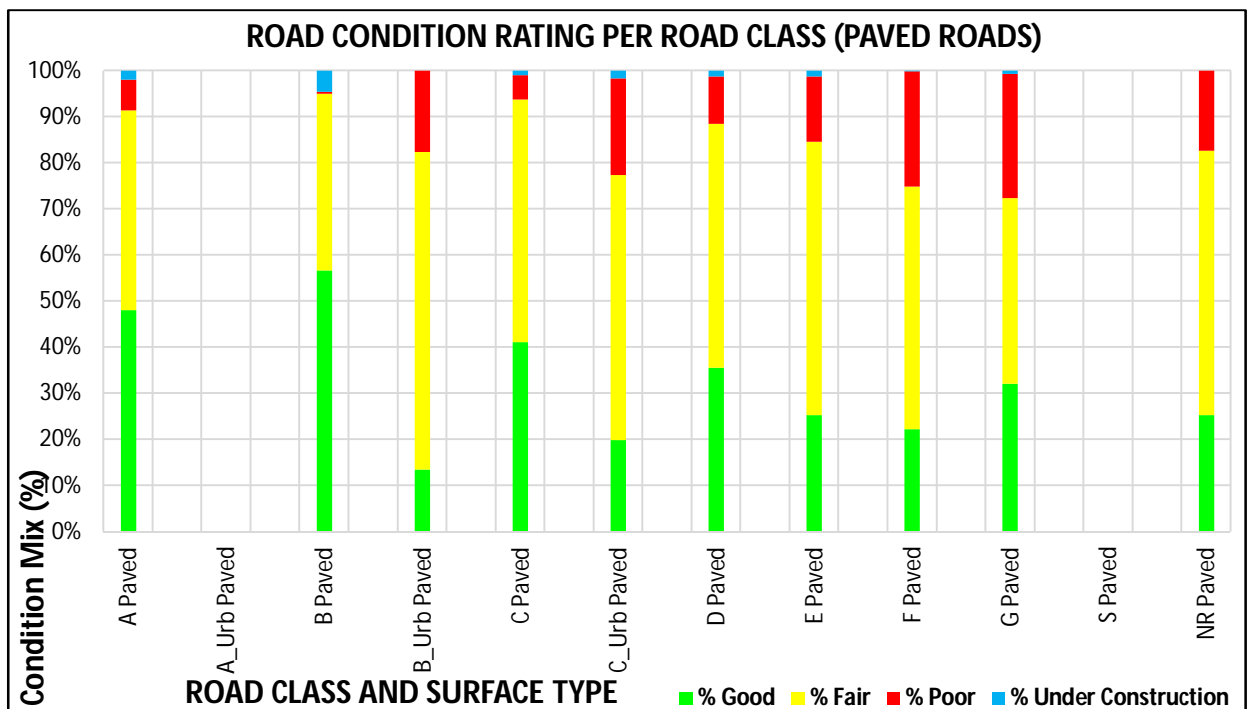
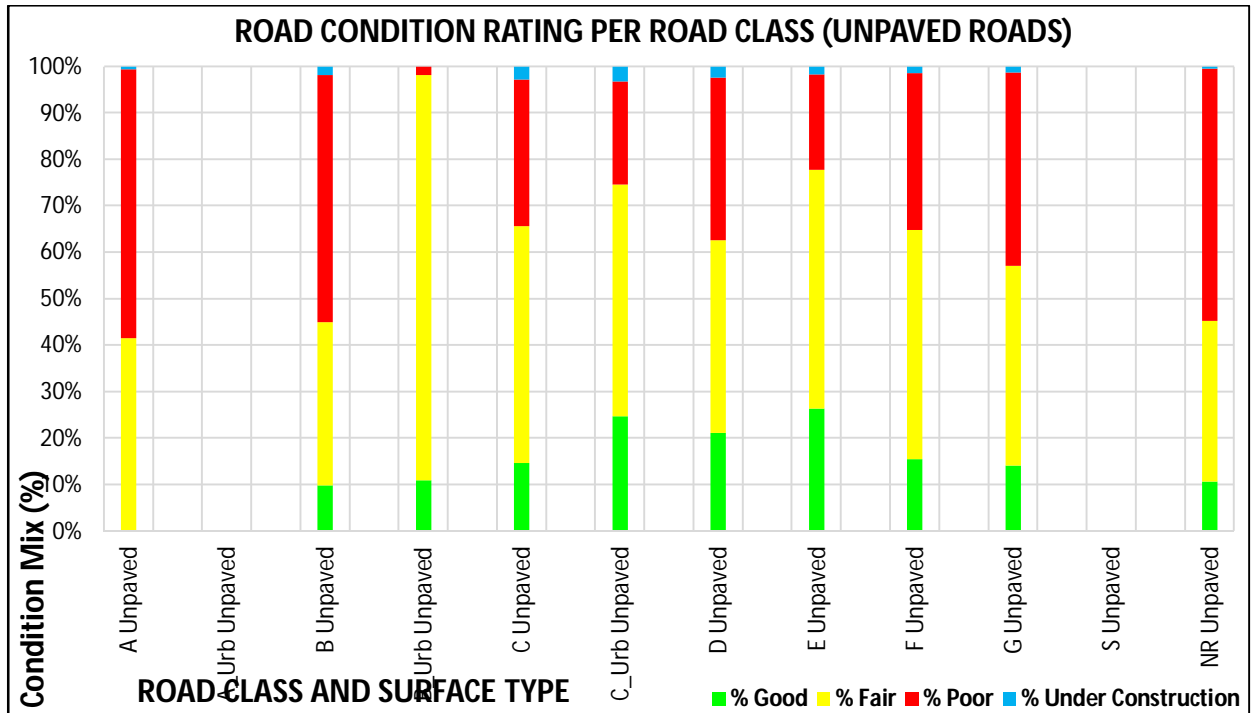


Fig 3.4: Graph of Overall road condition per road Class (Unpaved roads)



**b) Road Surface Type and Condition per Road Class per County (Classified Roads)**

Table 2B in Appendix 1 shows a detailed summary of the Surface Type and Road Condition per Road Class for Classified Roads per County.

Figures 3.5 and 3.6 below is a presentation of the Surface type and Condition per road Class per County for both Paved and Unpaved roads.

Fig 3.5: Graph of Overall road condition per road Class per County (Paved roads)

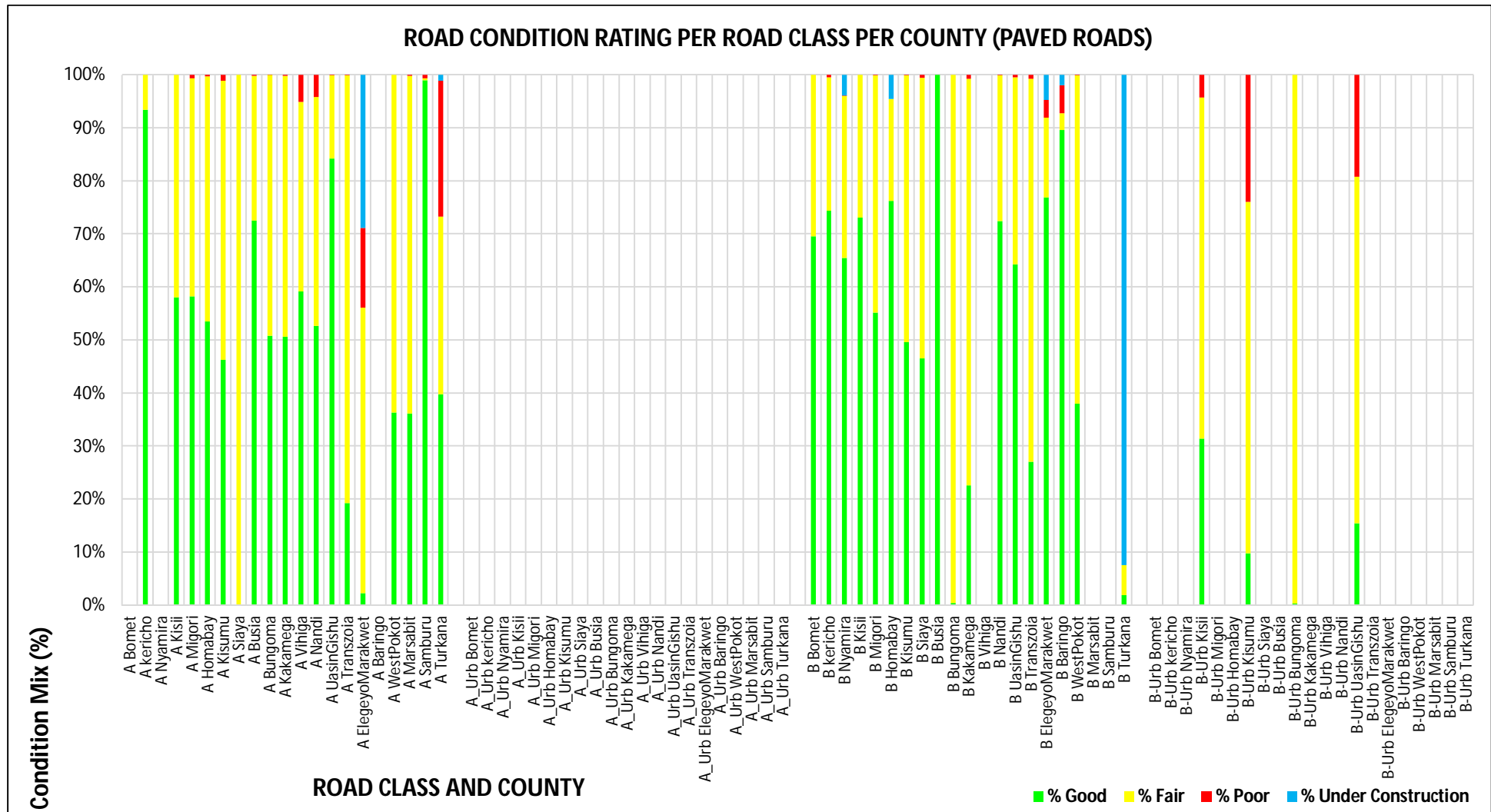


Fig 3.5 (cont'd): Graph of Overall road condition per road Class (Paved roads)

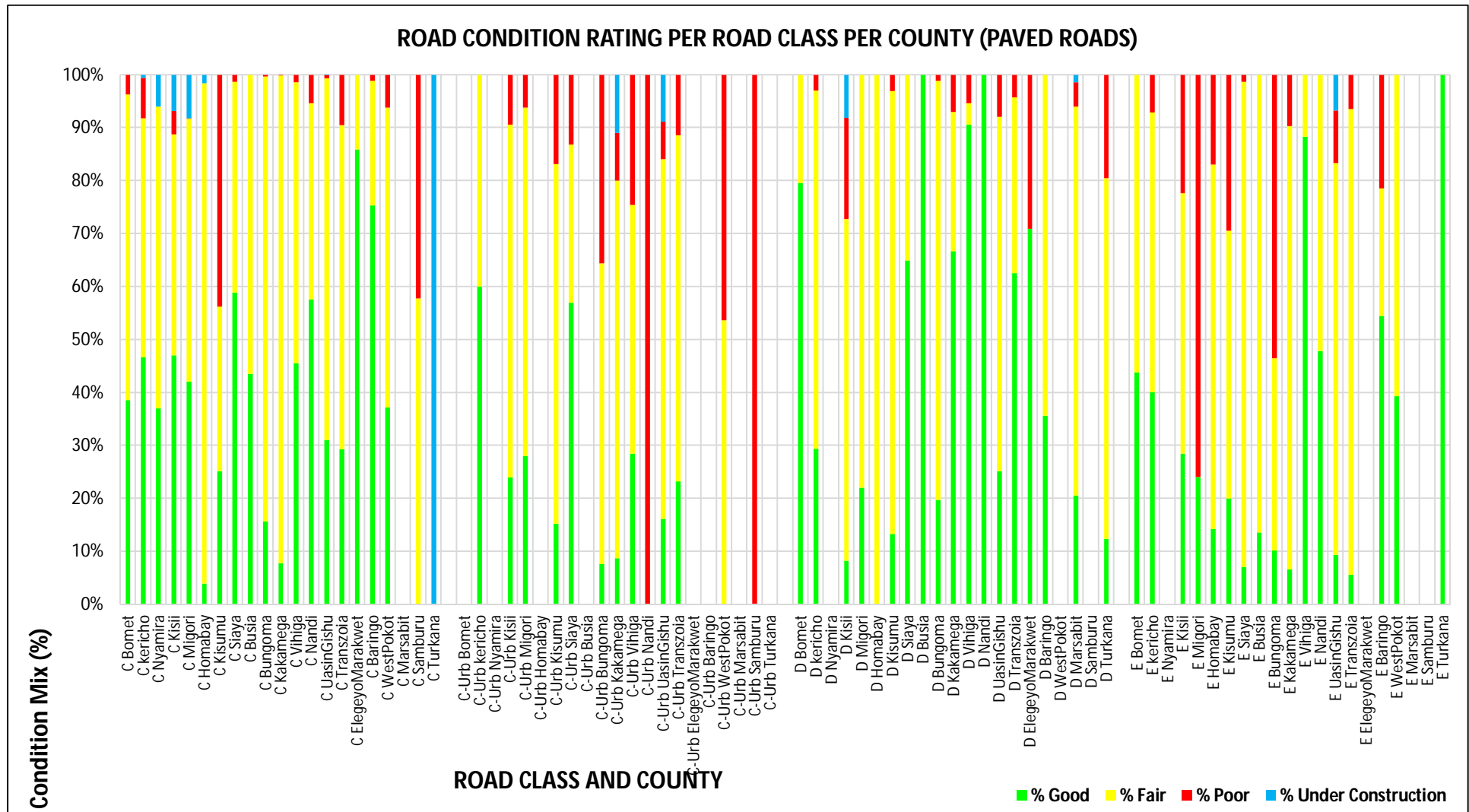


Fig 3.5 (cont'd): Graph of Overall road condition per road Class (Paved roads)

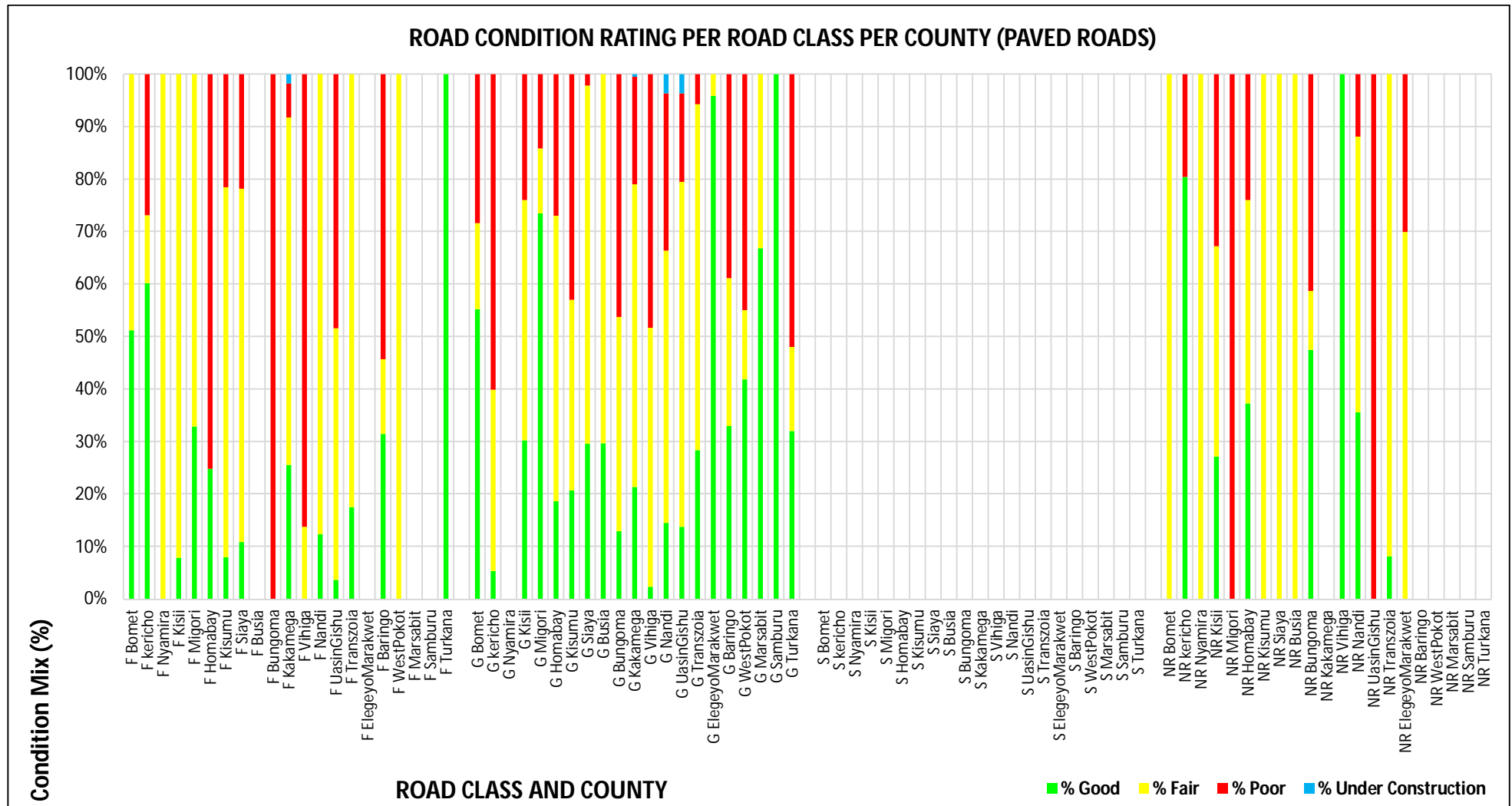


Fig 3.6 : Graph of Overall road condition per road Class (Unpaved roads)

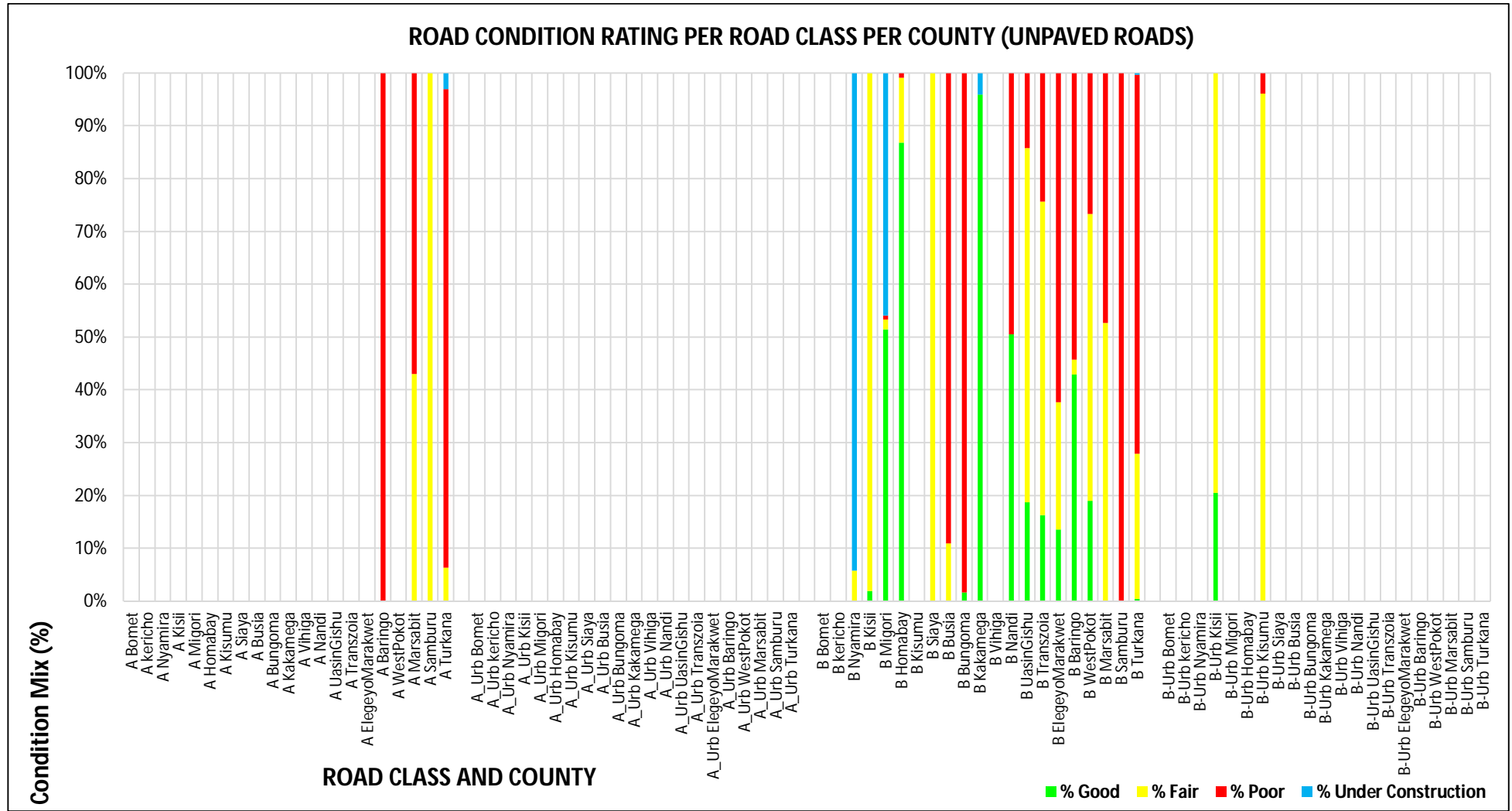


Fig 3.6 (cont'd): Graph of Overall road condition per road Class (Unpaved roads)

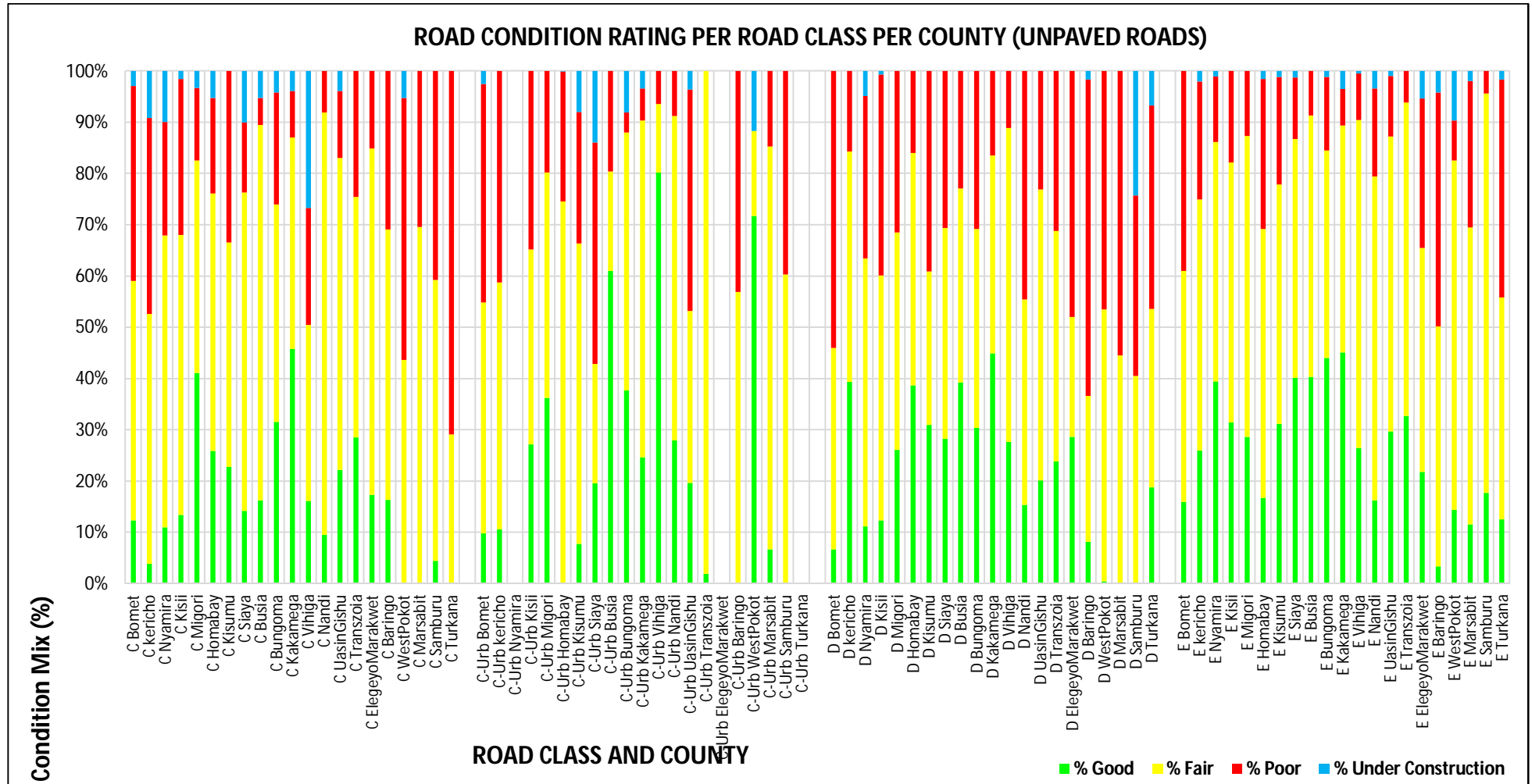
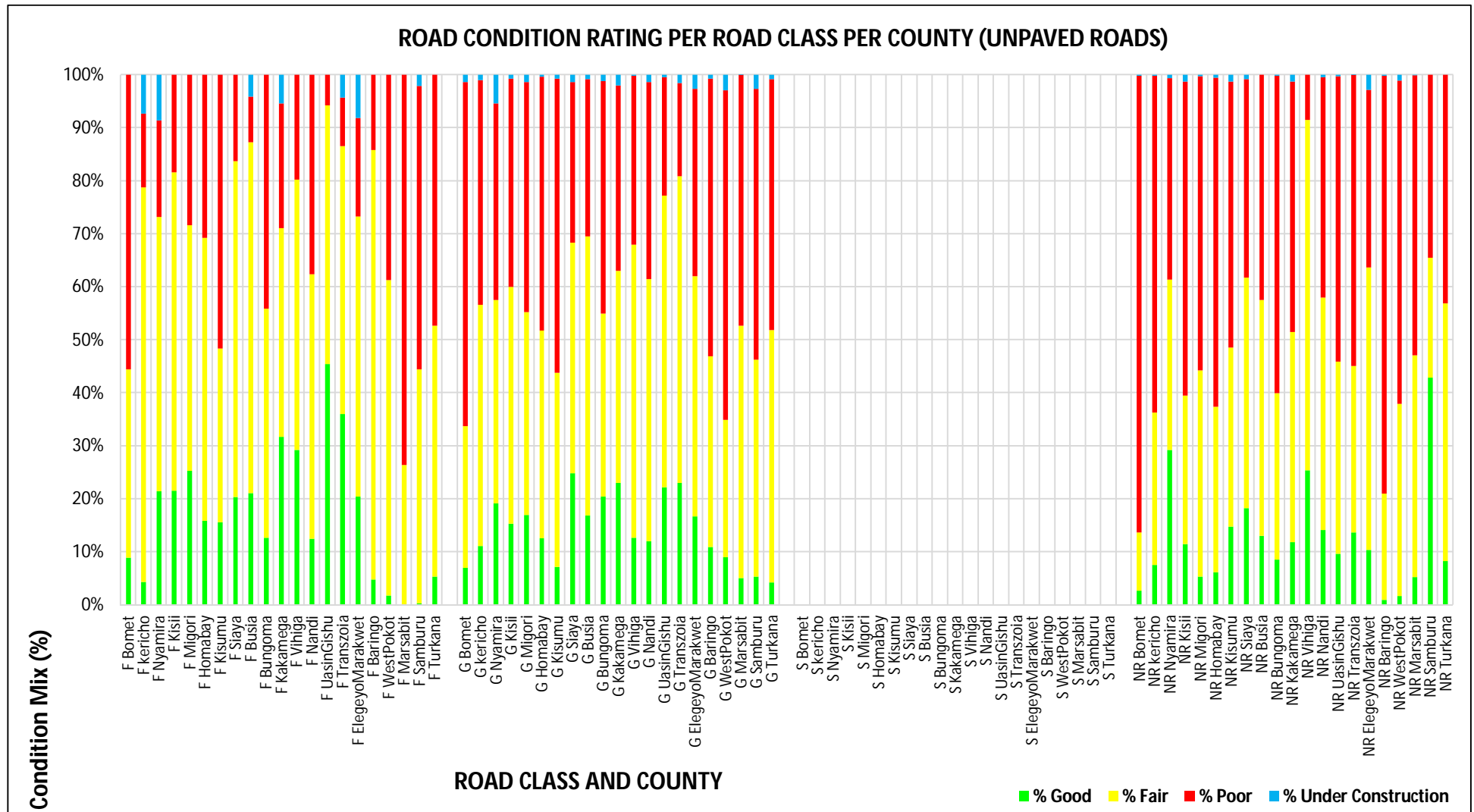




Fig 3.6 (cont'd): Graph of Overall road condition per road Class (Unpaved roads)



### c) Summary of Surface Type and Road Condition Per Road Class (Narrow Roads)

Out of the total of 26,050 km of Narrow roads surveyed in the twenty one counties, 22,546 km of had a road reserve more than six (6) meters constituting 86.5% while 3,503 km were below 6m constituting 13.5 %. This confirms that the proportion of the Narrow roads with road reserve widths of 4-6m is not greater that 30% as noted in Task 3.1 (iv) of the terms of Reference.

14.4 % of the Narrow roads recorded were in good condition, 38.6 % in Fair condition, 45.5% in Poor condition and 1.4% were under construction.

Table 2C in Appendix 1 shows a detailed summary of the Surface Type and Road Condition per Road Class for the Narrow Roads.

Figures 3.7 and 3.8 below shows the overall road condition for the Paved and Unpaved Narrow roads per county.

Fig 3.7: Graph of Overall road condition of Paved Narrow Roads per county

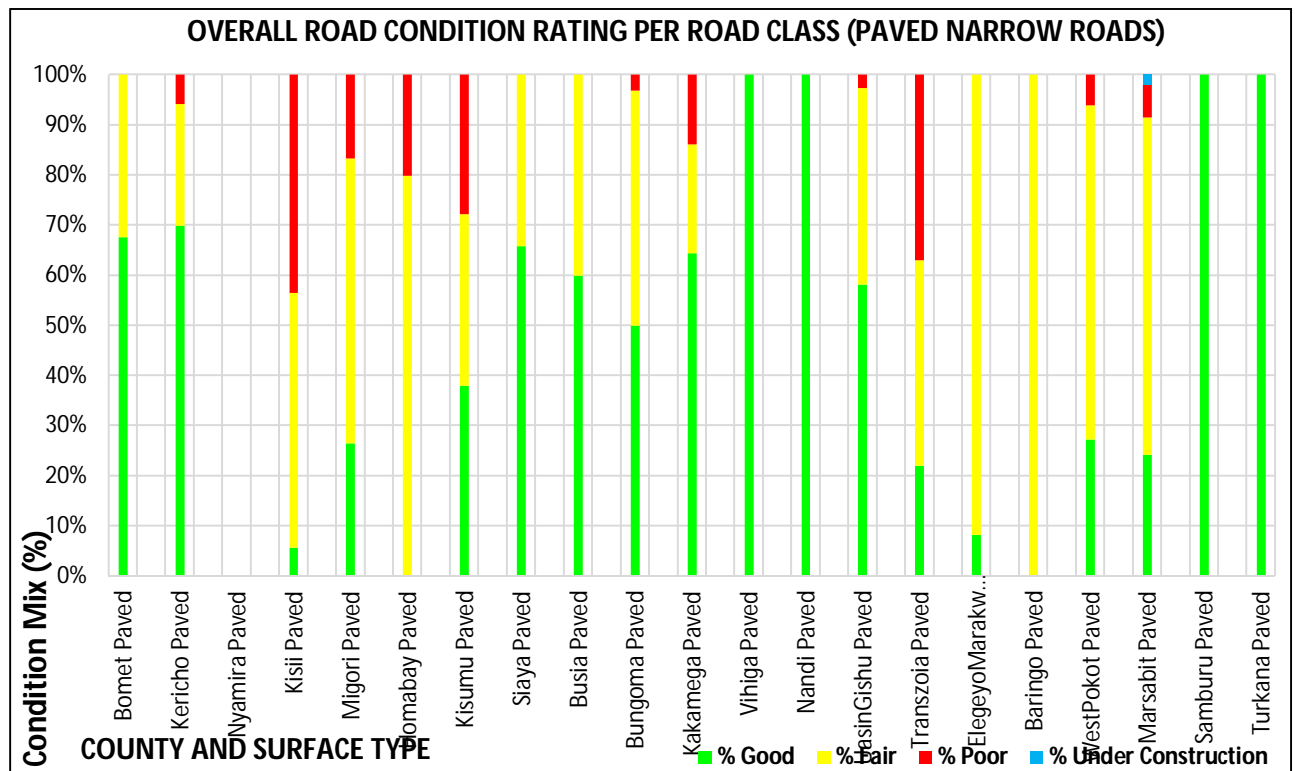
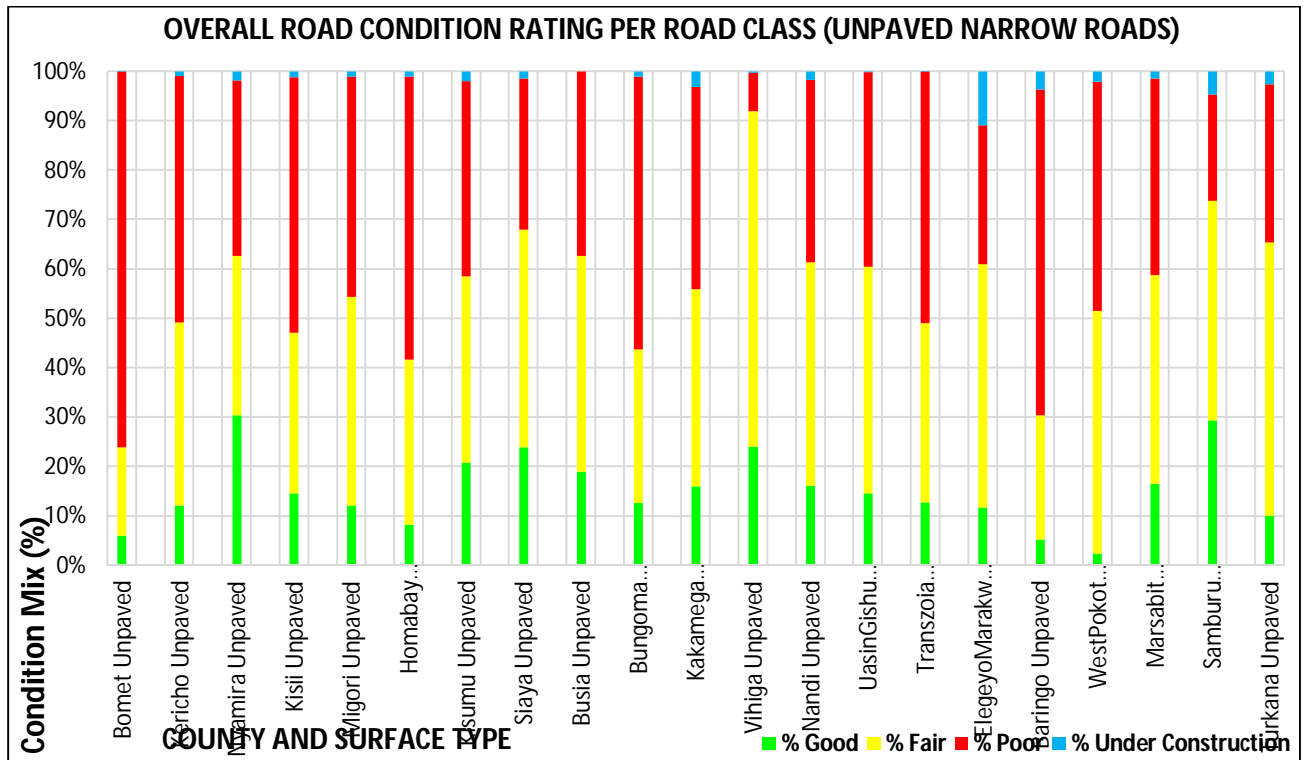


Fig 3.8: Graph of Overall road condition of Unpaved Narrow Roads per county



**d) Surface Type and Road Condition Per Road Class per County (Narrow Roads)**

Table 2D in Appendix 1 shows a detailed summary of the Surface Type and Road Condition per Road Class (Narrow Roads) per County

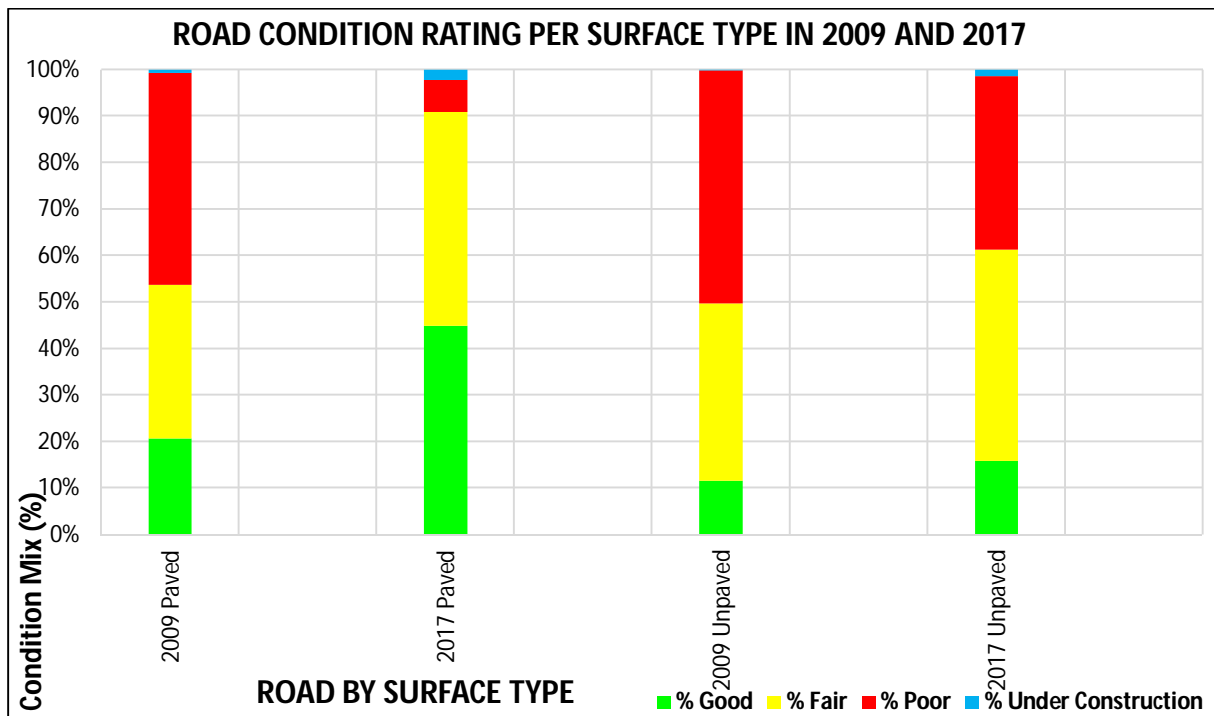
**e) Comparison of the Road Surface condition in 2009 and 2017.**

In 2017 a total of 5,911 km of paved roads have been mapped against 4,838 captured in 2009. Similarly, 47,719 km of Unpaved roads have been captured against 48,389 of 2009. Table 3.5 and Figure 3.8 below shows the data comparison.

Table 3.5: A Summary of the Overall road condition in 2009 vs 2017

SURFACE TYPE	ROAD CONDITION COMPARISON (Km/%)								TOTAL	
	Good		Fair		Poor		Under Construction		2009	2017
	2009	2017	2009	2017	2009	2017	2009	2017		
PAVED	963.93	2652.37	1544.77	2720.92	2295.51	407.19	34.30	131.28	4,838.52	5,911.76
	21.45%	44.87%	34.37%	46.03%	1,978.0	6.89%	0.71%	2.22%		
UNPAVED	5567.11	7462.00	18471.36	21453.92	24276.86	17670.54	74.42	632.90	48,389.75	47,219.36
	11.50%	15.80%	38.17%	45.43%	50.17%	37.42%	0.15%	1.34%		

Fig 3.9: Comparison of the overall road condition in 2009 vs 2017



Overall, the road network condition has continued to improve between 2009 and 2017 with the paved roads doubling the coverage in good condition and significantly reducing the network in poor condition. The same is also noted in the Unpaved road network. This can be attributed to the increased investment in the road maintenance under RLMF spearheaded by the Kenya Roads Board (KRB).

### 3.2.3. Road Reserve Width

#### a) Road Reserve Width Overall

Out of the 79,181 km of the entire road network captured over the twenty one counties in the Western Zone, 5,543 km were found to have a Road Reserve width below 6m constituting about 7.0% of the entire network. 26,690 km between 6-9m(33.7%), 42,052 km between 9-25m (53.1%), 2,104 km between 25-40m (2.7%) and 2,790 km above 40m (3.0%).

Table 3A in Appendix 1 shows a summary of the Road Reserve Width for all the counties.

#### b) Road Reserve Width Per County

Table 3.6 below show the road reserve width recorded per county.

Table 3.6: A Summary of the Road Reserve Width per County

COUNTY		ROAD RESERVE WIDTH (m)					TOTAL LENGTH (Km)
		<6m	6m-9m	9m-25m	25m-40m	>40m	
1	Bomet	473.703	1194.626	2029.591	103.047	62.481	3863.448
2	Kericho	359.393	1400.386	2318.311	120.196	101.042	4299.328
3	Nyamira	109.939	464.563	1009.232	108.603	6.194	1698.531
4	Kisii	167.803	797.65	1984.967	143.505	33.312	3127.237
5	Migori	255.706	1377.452	2175.85	12.406	146.298	3967.712
6	Homabay	526.963	1551.443	1933.533	140.037	89.095	4241.071
7	Kisumu	289.506	1534.272	1653.087	77.626	232.104	3786.595
8	Siaya	275.045	1559.293	2153.479	121.084	162.644	4271.545
9	Busia	199.606	1396.747	1482.501	79.199	75.402	3233.455
10	Bungoma	804.331	2007.02	2172.854	106.711	127.16	5218.076
11	Kakamega	416.574	1508.067	3124.071	64.869	178.656	5292.237
12	Vihiga	48.499	399.925	488.784	70.106	35.189	1042.503
13	Nandi	97.087	1305.228	1741.461	110.244	86.395	3340.415
14	UasinGishu	127.769	1897.115	3345.403	214.95	176.378	5761.615
15	Transzoia	223.147	1066.461	1329.71	64.314	95.214	2778.846
16	ElegeyoMarakwet	75.319	841.087	1147.727	68.948	62.233	2195.314
17	Baringo	152.645	994.275	1249.329	44.216	111.324	2551.789
18	WestPokot	134.794	1059.273	2336.853	151.848	146.823	3829.591
19	Marsabit	128.211	1319.883	3758.841	76.165	371.796	5654.896
20	Samburu	77.127	891.502	1619.949	143.709	104.499	2836.786
21	Turkana	600.482	2124.161	2996.667	82.918	386.215	6190.443
<b>Total (km)</b>		<b>5543.649</b>	<b>26690.429</b>	<b>42052.2</b>	<b>2104.701</b>	<b>2790.454</b>	<b>79181.433</b>
<b>Percentages (%)</b>		<b>7.0%</b>	<b>33.7%</b>	<b>53.1%</b>	<b>2.7%</b>	<b>3.5%</b>	<b>100.0%</b>

Table 3B in Appendix 1 shows a summary of the Road Reserve Width per County.

### **3.2.4. Road Register**

The Combined Road Register for the data captured have been prepared and listed in Table 4A and 4B of Appendix 1. The Register contains the Road ID/No., Road Class, Road Name and the Road Length (Km).

The data has been prepared for the following:

- Classified Roads per county
- Narrow roads per county

A copy of the register has been submitted as Volume 2 of this report together with a soft copy of the entire Geo-database as captured during the study.

### **3.2.5. Drainage Structures**

The assignment included the inventory and condition surveys of all structures along the Classified roads as well as the Narrow roads.

The following structures have been captured;

- Bridges (Bailey, Girder, Truss, Tunnel and Arches)
- Pipe Culverts (<600mm dia. >900mm dia. 600-900mm dia., inaccessible)
- Box Culverts
- Drifts
- Others

#### **a) Drainage Structures on Classified Road Network**

A total of 32,191 structures have been recorded along the Classified Road Network. Of these, 17.4% were found to be in Good condition, 69.9% in Fair conditions while 12.6% were in poor condition.

The Table below shows a summary of the structures surveyed per county along Classified roads.

Table 3.7: A Summary of Structures on Classified roads per County

COUNTY	STRUCTURE TYPE (ON CLASSIFIED ROADS)					Total
	Bridges	Box Culverts	Pipe Culverts	Drifts	Other	
Bomet	86	26	1324	2	0	1438
kericho	109	36	2642	5	5	2797
Nyamira	53	68	1243	0	1	1365
Kisii	51	47	2455	1	2	2556
Migori	73	56	1667	17	9	1822
Homabay	40	116	2174	29	8	2367
Kisumu	62	132	2087	18	2	2301
Siaya	31	58	1479	7	1	1576
Busia	33	39	962	0	0	1034
Bungoma	83	64	1697	2	6	1852
Kakamega	121	57	1507	2	1	1688
Vihiga	42	25	585	0	0	652
Nandi	75	36	1504	3	6	1624
UasinGishu	132	55	1982	2	2	2173
Transzoia	39	31	1211	0	1	1282
ElegeyoMarakwet	33	36	1775	81	0	1925
Baringo	13	5	949	46	0	1013
WestPokot	20	9	829	151	0	1009
Marsabit	1	2	221	177	0	401
Samburu	9	5	457	101	0	572
Turkana	4	196	442	92	10	744
<b>TOTAL</b>	<b>1110</b>	<b>1099</b>	<b>29192</b>	<b>736</b>	<b>54</b>	<b>32191</b>

Structure condition on classified roads per county

Fig 3.10 below shows the structure condition per county on Classified roads



Fig 3.10: Graph of Overall structure condition on Classified roads per county

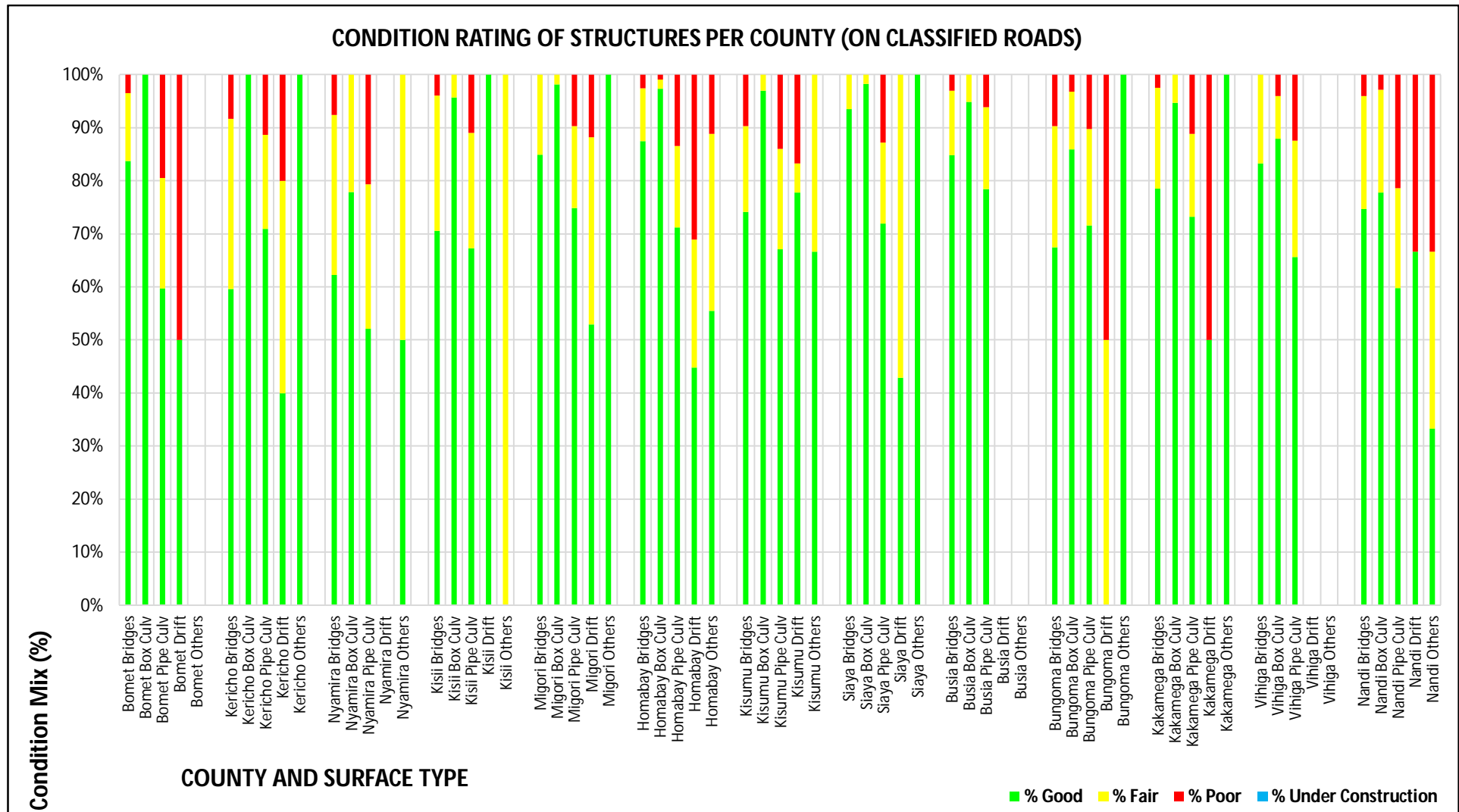
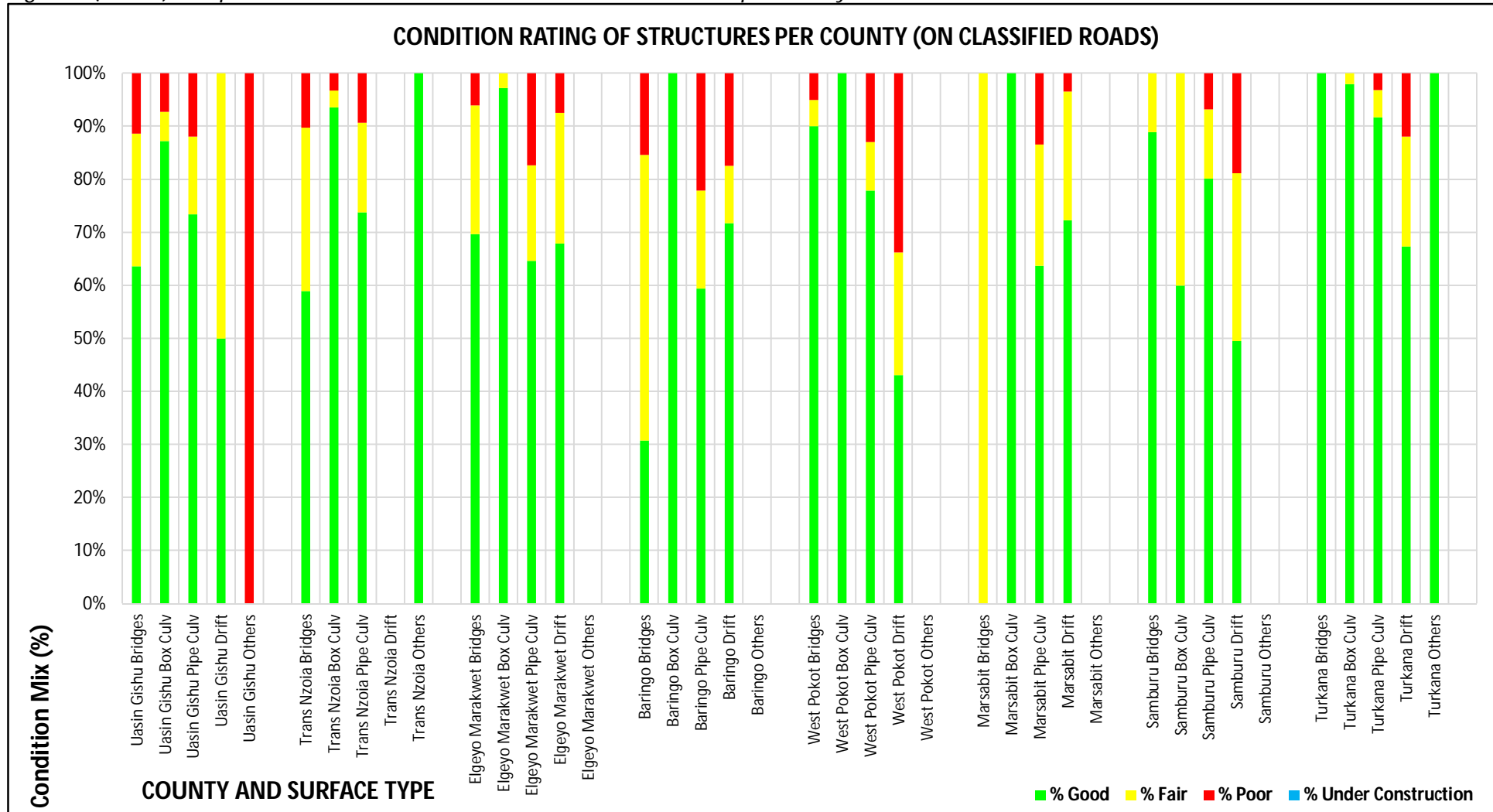


Fig 3.10 (cont'd): Graph of Overall structure condition on Classified roads per county



### b) Drainage Structures on Narrow Roads

A total of 10,982 structures have been recorded along the Narrow Road network. Of these, 81.4% were found to be in Good condition, 10.8% in Fair conditions while 7.8% were in poor condition.

The Table below shows a summary of the structures surveyed per county along Narrow roads.

*Table 3.8: A Summary of Structures on Narrow roads per County*

COUNTY	STRUCTURE TYPE (ON NARROW ROADS)					
	Bridges	Box Culverts	Pipe Culverts	Drifts	Other	Total
Bomet	65	4	584	2	0	655
kericho	81	68	1829	2	6	1986
Nyamira	40	16	185	0	0	241
Kisii	28	12	387	0	0	427
Migori	31	39	708	4	0	782
Homabay	28	16	489	3	3	539
Kisumu	26	39	712	3	0	780
Siaya	13	4	763	0	0	780
Busia	37	25	770	1	0	833
Bungoma	204	29	1346	0	0	1579
Kakamega	63	26	715	0	0	804
Vihiga	31	22	175	0	0	228
Nandi	27	3	204	1	0	235
UasinGishu	32	5	251	0	0	288
Transzoia	12	3	173	0	0	188
ElegeyoMarakwet	7	1	73	0	0	81
Baringo	14	3	285	13	0	315
WestPokot	8	3	62	9	0	82
Marsabit	0	1	29	42	0	72
Samburu	0	0	47	6	0	53
Turkana	0	2	28	4	0	34
<b>TOTAL</b>	<b>747</b>	<b>321</b>	<b>9815</b>	<b>90</b>	<b>9</b>	<b>10982</b>

Fig. 3.11 below shows the structure condition on Narrow roads per county

Fig 3.11: Graph of Overall structure condition on Narrow roads per county

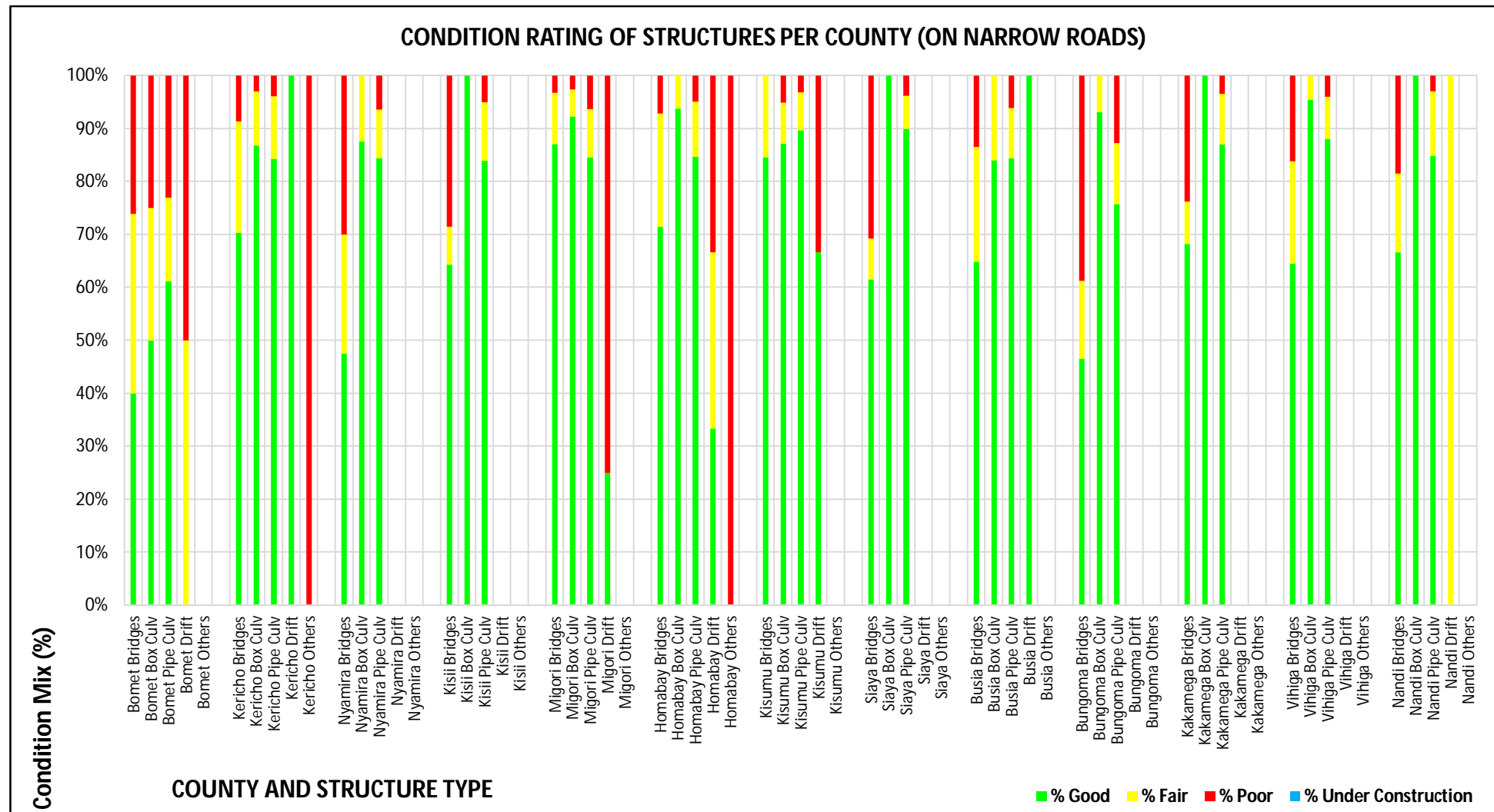
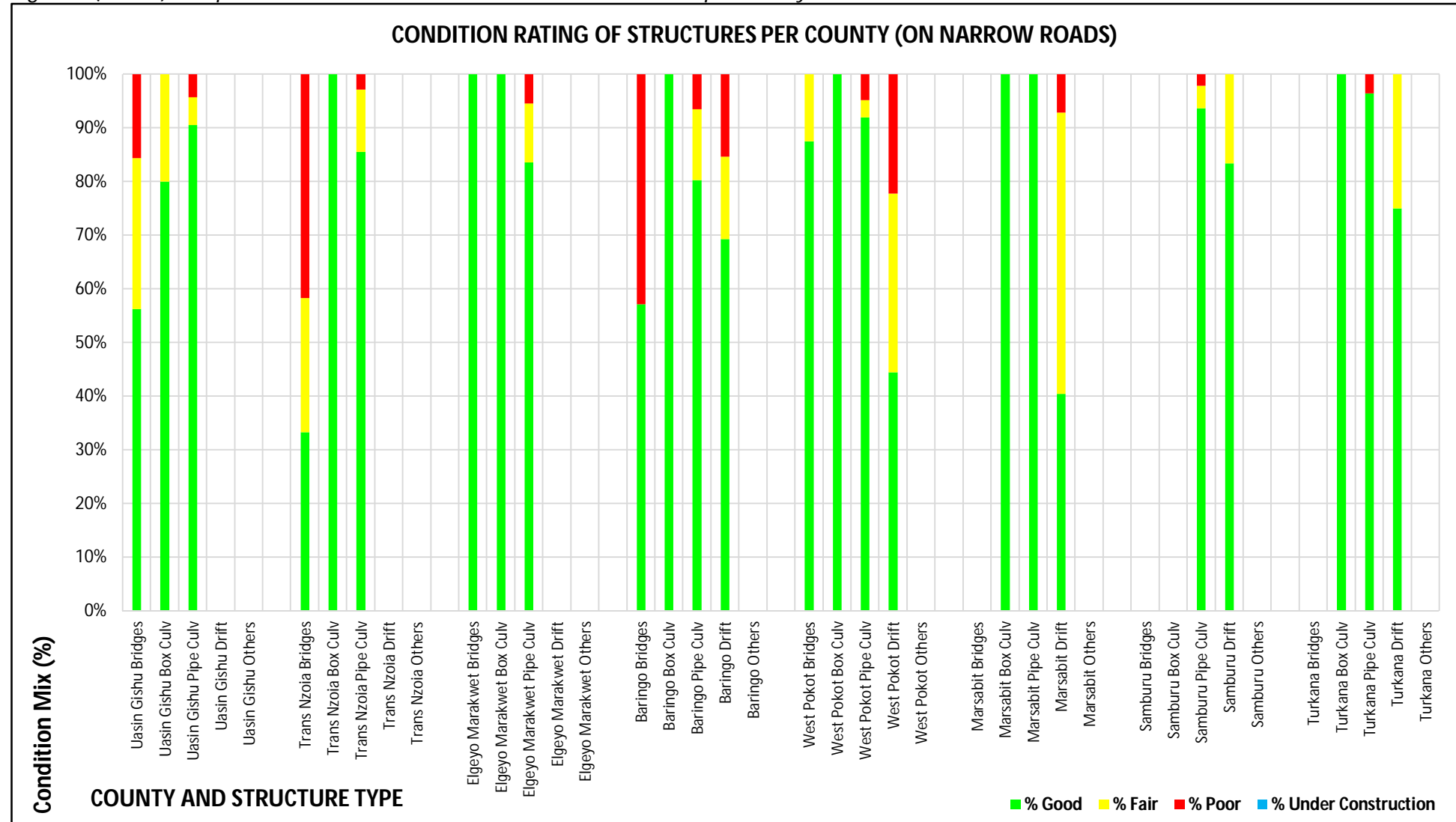


Fig 3.11 (cont'd): Graph of Overall structure condition on Narrow roads per county



### **3.3. Data collection on paved roads**

As reported in Chapter 2 of this report, the condition survey of all paved roads was sub-contracted to the Materials Testing and Research Division (MTRD) of the Ministry of Transport and Infrastructure, Housing and Urban Development (MoTIHUD).

The Road Lesser Profiler (RLP) equipment was used to carry out survey the paved roads, while Falling Weight Deflectometer (FWD) was used to measure the pavement strength.

#### **3.3.1. International Roughness Index (IRI)**

One of the key parameters measured by the Road Lesser Profiler was the riding quality of the paved roads surface. This was recorded in terms of the International Roughness Index (IRI). Table 3,9 below shows the results of the IRI average per county.

The highest IRI have been recorded in West Pokot at 7.25 while Marsabit recorded the lowest IRI at 2.60. A high IRI reading is a general indicator of poor riding quality.

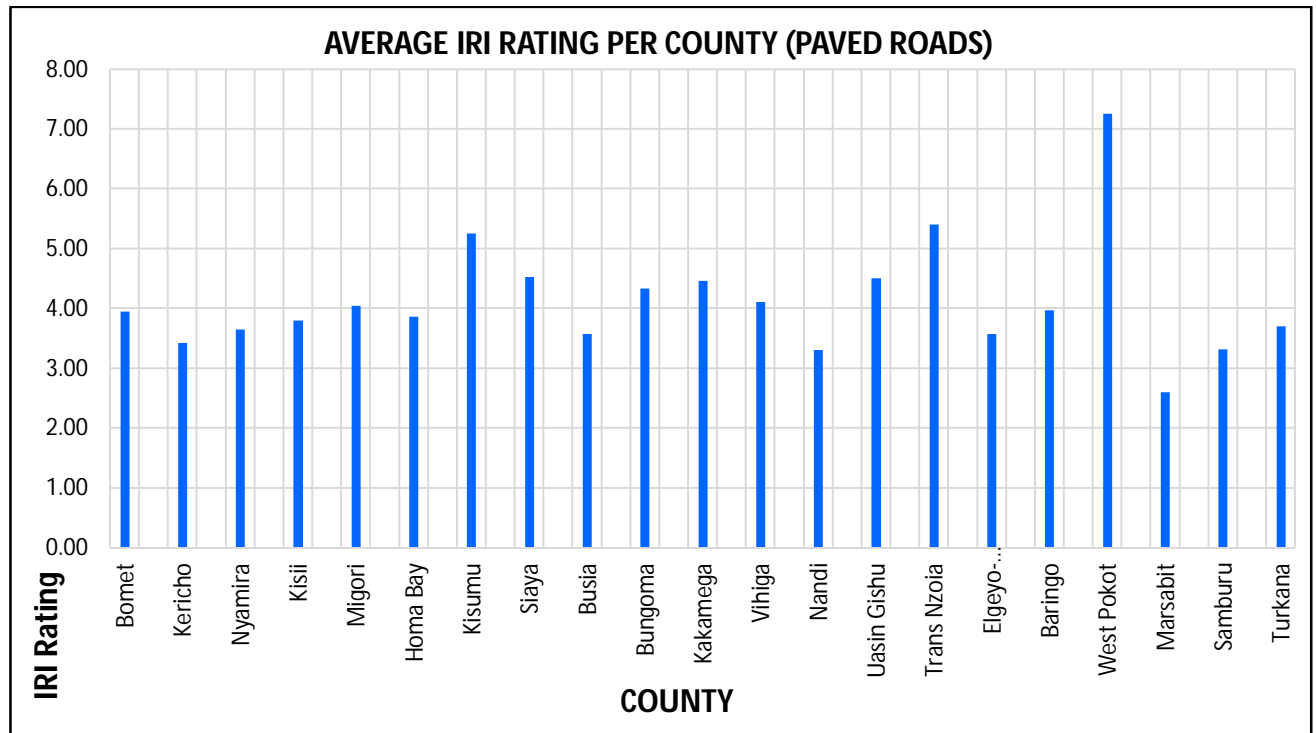
Table 3.9: IRI Average per County

COUNTY	TOTAL LENGTH (Km)	AVRG. IRI_LANE
Bomet	180.79	3.95
Kericho	322.63	3.42
Nyamira	112.75	3.65
Kisii	297.76	3.80
Migori	190.47	4.04
Homa Bay	209.19	3.87
Kisumu	324.84	5.25
Siaya	354.73	4.53
Busia	157.69	3.57
Bungoma	224.32	4.34
Kakamega	270.23	4.46
Vihiga	140.82	4.11
Nandi	185.77	3.31
Uasin Gishu	440.38	4.50
Trans Nzoia	158.53	5.40
Elgeyo-Marakwet	185.51	3.57
Baringo	318.55	3.97
West Pokot	80.05	7.25
Marsabit	346.39	2.60
Samburu	108.68	3.31
Turkana	312.94	3.70

Figure 3.12 shows a plot of the average IRI measured per county.



Fig 3.12: Graph of Average IRI on Paved roads per county



### 3.3.2. Falling Weight Deflectometer

The Pavement strength was surveyed using the Falling Weight Deflectometer (FWD) equipment. This was then recorded in terms of Structural number. Table 3.10 below show the average structural number recorded on the paved road per county.

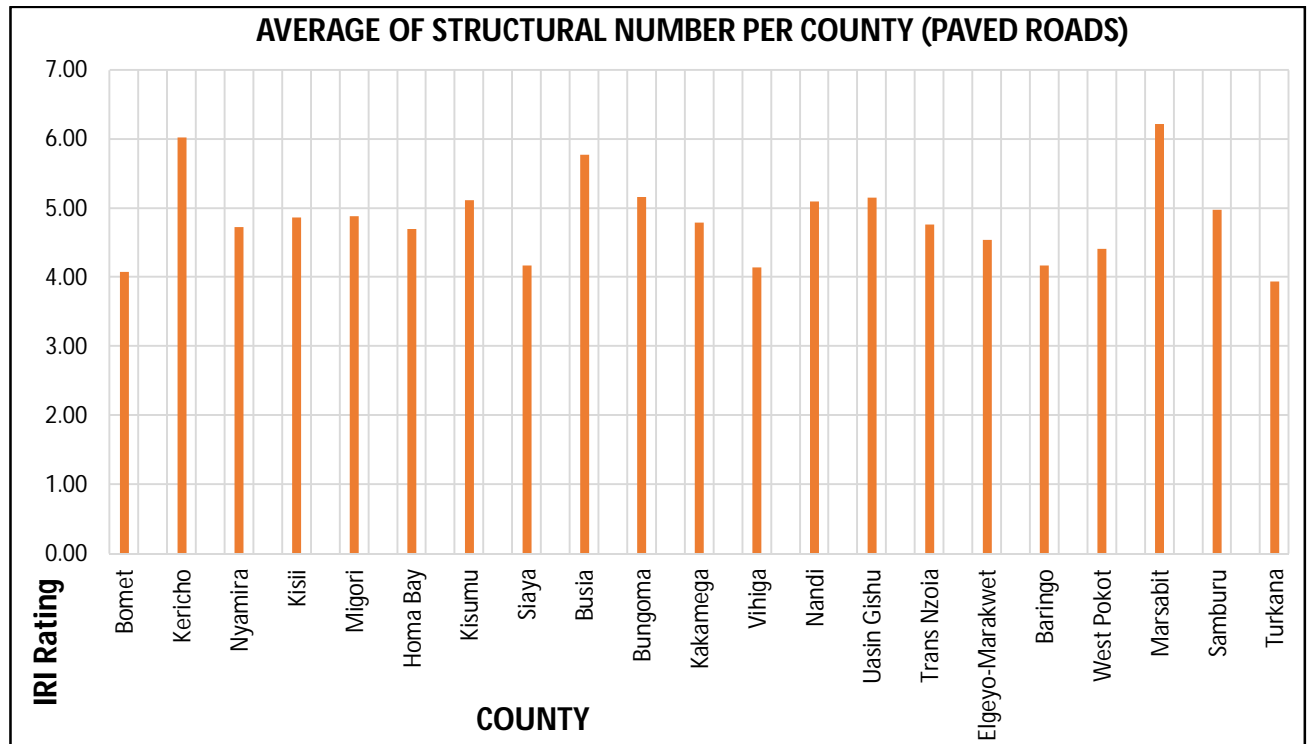
A higher Structural Number is a general indicator of a strong pavement in good condition. Marsabit recorded the highest Structural Number average at 6.22 while Turkana had the lowest at an average of 3.94.

Table 3.10: Average of Structural Number per County

COUNTY	TOTAL LENGTH (Km)	AVRG. SN
Bomet	180.79	4.08
Kericho	322.63	6.02
Nyamira	112.75	4.73
Kisii	297.76	4.87
Migori	190.47	4.88
Homa Bay	209.19	4.70
Kisumu	324.84	5.11
Siaya	354.73	4.17
Busia	157.69	5.78
Bungoma	224.32	5.17
Kakamega	270.23	4.79
Vihiga	140.82	4.14
Nandi	185.77	5.10
Uasin Gishu	440.38	5.15
Trans Nzoia	158.53	4.76
Elgeyo-Marakwet	185.51	4.54
Baringo	318.55	4.17
West Pokot	80.05	4.41
Marsabit	346.39	6.22
Samburu	108.68	4.98
Turkana	312.94	3.94

Figure 3.13 shows a plot of the average Structural Number (SN) measured on the paved roads per county.

Fig 3.13: Graph of Average IRI on Paved roads per county



### 3.4. Salient Issues

During the assignment, a number of salient issues were noted. They are summarized as follows;

#### 3.4.1. Classified Roads Naming

As highlighted under Item 2.3.2.1, there were few challenges in naming of roads which were overcome as stated. Besides, in the database of 2009, a situation of consistently one name for the road instead of the start and end to define the road was encountered. Plans were made to obtain names of starts and ends of roads using permanent features like schools, churches and mosques for the current Road Inventory and Condition Survey.

Together with adopting road/street naming like Jolyat Road 1, Homa Bay Street 1 and Kalyet Road 2, and using street names like Jaramogi Street, where they existed in the records of the County offices, the issue of road naming was resolved. There were no repetitive names as evidenced in the road register given in Table 4 of Appendix 1 of this report.

#### 3.4.2. Narrow Roads Naming

Naming of Narrow Roads had initially proved a little difficult. After consultations, the Client approved that the Narrow Roads be numbered as NR\_04\_190 where NR designated Narrow Road, 04 was for the National Number for the County while 190 represented a unique numerical given within the county.

For the newly upgraded/constructed roads, whose Road Reserve was equal or greater than 9m, the Consultant was asked to ensure that these new roads take the next available number in the relevant class in the county. The Consultant adopted: X\_47\_N\_0001, where X stood for Road Class (provisionally given in the table below), 47 represented the County National Number, N stood for Newly Upgraded/Constructed road and 0001 was the unique numeral for the road in the county.

Initially, the Consultant tried to assign specific names to Narrow Roads as obtained from local personnel although with difficulties as different people gave different road names for the same roads. To resolve this confusion, the Consultant used land marks such as schools, churches and village names for starts and ends of the roads as stated under Item 3.5.1 above.

### **3.5. Book of Maps**

The results of the Road Inventory and condition survey analysis have been presented as a book of maps per county.

This has been presented in Appendix 2 and bound as a separate volume.

## 4. RURAL ACCESS INDEX

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A Working paper on Rural Population that lives within 2 km of All-Weather Roads (Rural Access Index) was prepared and submitted to KRB as a separate report.

The Rural Access Index contained in the Working Paper for the year 2017 was 84%. In comparison with the World Bank RAI of about 56% obtained in the early years of 2000, this showed that there was an improvement in the quality of road network over the years.

Counties with low RAI require investments in road development and maintenance depending on local conditions, such as climate, and viability in terms of potential economic activities.

RAI per county, in relation to RAIs for other counties and the country as a whole, can be adopted as a key transport headline indicator in Kenya for monitoring network performance and also for formulation of appropriate policies and strategies.

It would also be necessary for urban accessibility index to be measured. Some urban areas, especially the slums, may have roads in poor state and such condition is a factor in the determination of RAI.

## 5. RICS DATA COLLECTION AND UPDATE FRAMEWORK

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A Road Inventory and Condition Data Collection and Update Framework for Classified Roads was prepared and submitted to KRB as a separate report. This report included:

- (a) The findings on review of the existing systems of the Roads Agencies
- (b) Guidelines, standards, equipment, processes and procedures that would be required for future Data Collection and Update for Classified Roads, and
- (c) Proposals and recommendations for the Data Collection and Update Framework.

The recommendations stated in the report on the Road Inventory and Condition Data Collection and Update Framework for Classified Roads included the following:

- (i) The Data Dictionary implemented for the current RICS study (2016/17) is to be shared with all road agencies and adopted uniformly.
- (ii) There is need for establishment of Road Asset Management System for the entire group of the Road Agencies.
- (iii) Data collection procedures and standards adopted for the current RICS study (2016/17) are to be implemented across all agencies.
- (iv) Data collection equipment, for visual and instrumented collection, adopted for the current RICS study (2016/17) is to be implemented as a minimum across all agencies subject to technological advancements and availability of superior equipment.
- (v) Road Agencies are to undertake RICS on their respective networks annually and incorporate the data in their respective databases.
- (vi) Kenya Roads Board (KRB) is to hold the consolidated master database into which updates from each road agency are migrated following their annual RICS update exercise.
- (vii) KRB should also get involved with identifying and performing RICS on a representative sample of all agency networks for verification of updated databases instead of KRB undertaking a full-scale RICS study every 5 years.
- (viii) Standing Committee, to be appointed by PS of MoTIHUD, should be established to specifically handle and coordinate RICS related activities, policies and guidelines across all agencies and should be reporting to the Executive Director of KRB.
- (ix) The Standing Committee should advise on appropriate/emerging technology.
- (x) There should be improvement in the GIS representation of the road links, in the database, wherever an IRI point distance to the nearest line is over 20 m.
- (xi) Linear referencing of all roads should be defined and contained in the GIS shapefiles.

## 6. RICS DATA COLLECTION MANUAL

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A Road Inventory and Condition Data Collection Manual for Classified and Narrow Roads was prepared and submitted to KRB as a separate report. This report included:

- (a) Project background and objectives of the assignment
- (b) Rationale for Road Inventory and Condition Survey data collection
- (c) Logistics for Road Inventory and Condition Survey
- (d) Road Inventory and Condition Field work
- (e) Data transmission and storage
- (f) Unpaved Roads Data Processing and Analysis
- (g) Paved Roads Data Processing and Analysis
- (h) Road Inventory and Condition Survey Data Output
- (i) Conclusion and Recommendations

The Conclusion and recommendations stated in the Road Inventory and Condition Survey Data Collection Manual for the Classified and Narrow Roads included the following:

- (i) The details contained in this manual are usable for future Road Inventory and Condition Survey including road data collection, using Mobile Mappers, for roads, drainage structures, facilities, institutions and towns.
- (ii) For any desired or planned output on Paved Roads or Gravel Roads using specialized equipment of Falling Weight Deflectometer and Road Laser Profiler, it is recommended that the services are sourced from the Materials Testing and Research Division (MTRD) of the Ministry of Transport, Infrastructure, Housing and Urban Development as the division is currently the only entity within the country that owns such equipment.
- (iii) Besides MTRD, possibilities of outsourcing the services from firms with experience in the use of specialized equipment within the country or within the region or at international level would need to be explored.
- (iv) This manual should be reviewed regularly to keep pace with any new developments in technology. By the time of preparation of this manual, the portable tools available and used in the 2016/2017 RICS included Mobile Mapper 20 (MM20), Mobile Mapper 50 (MM50) and Trimble Juno. New equipment, such



as LIDAR (Light Detection and Ranging) and RADAR (Radio Detection and Ranging) for efficient data capture are beginning to emerge. Such new technologies, when made available and usable, need to be assimilated in the subsequent manual periodical reviews as may be necessary.

- (v) The RICS Manual is to be adopted by the Ministry of Transport, Infrastructure, Housing and Urban Development for use by KRB and Road Agencies for undertaking RICS.

## **7. CONCLUSION AND RECOMMENDATIONS**

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### **7.1. Collected Data**

The cumulative road length achieved for Classified Roads for Western Zone was 53,131 km against the planned total length of 53,603 km giving about 99.1%.

The total length of Narrow Roads achieved counties was 26,050 km out of which 86.5% (22,546km) was for the Narrow Roads with the width equal to or greater than 6 m.

The complete Road Register have been prepared and included in Volume 2 of this report.

### **7.2. Rural Access Index**

The Rural Access Index for Western Zone, representing the Rural Population that lives within 2 km of All-Weather Roads, is 84%. This, when compared with the World Bank RAI of 56% for the early years of 2000, indicates that there has been an improvement of the quality of All-Weather Roads over the years.

Further detailed surveys need to be undertaken in counties with RAI values of lower than 70% while using population data which will be obtained from census of 2019 rather than relying on projected estimates. The information thereof is to be availed to the authorities for planning, programming and prioritization of investments in the road sector.

### **7.3. Data Collection Manual**

The developed Road Inventory and Condition Survey Data Collection Manual for Classified and Narrow Roads needs to be adopted by the Ministry of Transport, Infrastructure, Housing and Urban Development for future use by Kenya Roads Board and Road Agencies in undertaking the RICS either through outsourcing or internally.

### **7.4. Data Collection and Update Framework**

The recommendations stated in the RICS Data Collection and Update Framework for Classified Roads need to be adopted for orderly future RICS and Data Management.

## **APPENDIX 1 : SUMMARIES OF THE ROAD REGISTER**

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### **TABLE 1A: SUMMARY OF SURFACE TYPE AND ROAD CONDITION**

**TABLE 1A: SURFACE TYPE AND ROAD CONDITION - OVERALL**

SURFACE TYPE	LENGTH (Km) & CONDITION (%)				Total Length (km) & Condition
	Good	Fair	Poor	Under Construction	
Paved	2,698.5	2,764.0	416.8	131.6	6,010.8
Gravel	2,968.1	11,885.6	19,450.1	360.4	34,664.2
Earth	8,211.1	19,585.5	10,074.1	635.6	38,506.4
<b>Subtotal</b>	<b>13,877.7</b>	<b>34,235.1</b>	<b>29,941.0</b>	<b>1,127.6</b>	<b>79,181.4</b>
<b>Condition (%)</b>	<b>17.5%</b>	<b>43.2%</b>	<b>37.8%</b>	<b>1.4%</b>	<b>100.0%</b>

**TABLE 1B: SUMMARY OF SURFACE TYPE AND ROAD  
CONDITION (PER COUNTY)**

**TABLE 1B: SURFACE TYPE AND ROAD CONDITION PER COUNTY**

COUNTY	SURFACE TYPE	LENGTH (Km) & CONDITION (%)				Total Length (km) & Condition
		Good	Fair	Poor	Under Construction	
Bomet	Paved	106.028	92.198	8.811	0.0	207.037
	Gravel	269.868	865.645	1097.623	28.327	2261.463
	Earth	11.859	139.395	1242.598	1.096	1394.948
	<b>Subtotal</b>	<b>387.755</b>	<b>1097.238</b>	<b>2349.032</b>	<b>29.423</b>	<b>3863.448</b>
	<b>Condition (%)</b>	<b>10.04%</b>	<b>28.40%</b>	<b>60.80%</b>	<b>0.76%</b>	<b>100.00%</b>
kericho	Paved	230.182	131.268	25.465	1.004	387.919
	Gravel	490.377	1224.588	689.726	48.422	2453.113
	Earth	38.195	385.524	1028.903	5.674	1458.296
	<b>Subtotal</b>	<b>758.754</b>	<b>1741.38</b>	<b>1744.094</b>	<b>55.1</b>	<b>4299.328</b>
	<b>Condition (%)</b>	<b>17.65%</b>	<b>40.50%</b>	<b>40.57%</b>	<b>1.28%</b>	<b>100.00%</b>
Nyamira	Paved	75.634	46.78	0.059	5.591	128.064
	Gravel	287.54	515.105	297.513	71.282	1171.44
	Earth	73.849	124.867	194.221	6.09	399.027
	<b>Subtotal</b>	<b>437.023</b>	<b>686.752</b>	<b>491.793</b>	<b>82.963</b>	<b>1698.531</b>
	<b>Condition (%)</b>	<b>25.73%</b>	<b>40.43%</b>	<b>28.95%</b>	<b>4.88%</b>	<b>100.00%</b>
Kisii	Paved	164.972	144.827	22.604	9.971	342.374
	Gravel	388.32	930.008	549.883	10.457	1878.668
	Earth	79.543	287.029	528.822	10.801	906.195
	<b>Subtotal</b>	<b>632.835</b>	<b>1361.864</b>	<b>1101.309</b>	<b>31.229</b>	<b>3127.237</b>
	<b>Condition (%)</b>	<b>20.24%</b>	<b>43.55%</b>	<b>35.22%</b>	<b>1.00%</b>	<b>100.00%</b>
Migori	Paved	113.593	93.905	4.198	4.358	216.054
	Gravel	618.326	995.297	405.891	35.684	2055.198
	Earth	111.113	606.849	959.563	18.935	1696.46
	<b>Subtotal</b>	<b>843.032</b>	<b>1696.051</b>	<b>1369.652</b>	<b>58.977</b>	<b>3967.712</b>
	<b>Condition (%)</b>	<b>21.25%</b>	<b>42.75%</b>	<b>34.52%</b>	<b>1.49%</b>	<b>100.00%</b>
Homabay	Paved	142.421	92.024	3.075	7.449	244.969
	Gravel	466.715	1101.806	378.82	29.468	1976.809
	Earth	126.199	547.165	1339.169	6.76	2019.293
	<b>Subtotal</b>	<b>735.335</b>	<b>1740.995</b>	<b>1721.064</b>	<b>43.677</b>	<b>4241.071</b>
	<b>Condition (%)</b>	<b>17.34%</b>	<b>41.05%</b>	<b>40.58%</b>	<b>1.03%</b>	<b>100.00%</b>
Kisumu	Paved	139.868	213.905	80.611	0.0	434.384
	Gravel	420.113	801.601	614.348	19.84	1855.902
	Earth	59.385	466.249	959.759	10.916	1496.309
	<b>Subtotal</b>	<b>619.366</b>	<b>1481.755</b>	<b>1654.718</b>	<b>30.756</b>	<b>3786.595</b>
	<b>Condition (%)</b>	<b>16.36%</b>	<b>39.13%</b>	<b>43.70%</b>	<b>0.81%</b>	<b>100.00%</b>
Siaya	Paved	155.722	208.481	4.629	0.0	368.832
	Gravel	743.683	1099.08	308.212	32.421	2183.396
	Earth	219.398	678.352	794.168	27.399	1719.317
	<b>Subtotal</b>	<b>1118.803</b>	<b>1985.913</b>	<b>1107.009</b>	<b>59.82</b>	<b>4271.545</b>
	<b>Condition (%)</b>	<b>26.19%</b>	<b>46.49%</b>	<b>25.92%</b>	<b>1.40%</b>	<b>100.00%</b>
Busia	Paved	102.859	64.506	0.07	0.0	167.435
	Gravel	472.122	1039.08	296.213	17.227	1824.642
	Earth	131.753	486.95	616.233	6.442	1241.378
	<b>Subtotal</b>	<b>706.734</b>	<b>1590.536</b>	<b>912.516</b>	<b>23.669</b>	<b>3233.455</b>
	<b>Condition (%)</b>	<b>21.86%</b>	<b>49.19%</b>	<b>28.22%</b>	<b>0.73%</b>	<b>100.00%</b>
Bungoma	Paved	62.834	168.545	20.008	0.0	251.387
	Gravel	660.701	795.007	504.147	27.43	1987.285
	Earth	292.26	930.565	1733.689	22.89	2979.404
	<b>Subtotal</b>	<b>1015.795</b>	<b>1894.117</b>	<b>2257.844</b>	<b>50.32</b>	<b>5218.076</b>
	<b>Condition (%)</b>	<b>19.47%</b>	<b>36.30%</b>	<b>43.27%</b>	<b>0.96%</b>	<b>100.00%</b>
Kakamega	Paved	73.616	198.764	7.636	1.161	281.177
	Gravel	1016.566	1331.599	333.946	76.269	2758.38
	Earth	355.543	700.848	1160.532	35.757	2252.68
	<b>Subtotal</b>	<b>1445.725</b>	<b>2231.211</b>	<b>1502.114</b>	<b>113.187</b>	<b>5292.237</b>
	<b>Condition (%)</b>	<b>27.32%</b>	<b>42.16%</b>	<b>28.38%</b>	<b>2.14%</b>	<b>100.00%</b>
Vihiga	Paved	76.686	64.372	12.484	0.0	153.542
	Gravel	179.223	458.774	108.542	16.027	762.566
	Earth	17.502	58.428	50.465	0.0	126.395

COUNTY	SURFACE TYPE	LENGTH (Km) & CONDITION (%)				Total Length (km) & Condition
		Good	Fair	Poor	Under Construction	
	Subtotal	273.411	581.574	171.491	16.027	1042.503
	Condition (%)	26.23%	55.79%	16.45%	1.54%	100.00%
Nandi	Paved	174.195	101.293	14.223	0.413	290.124
	Gravel	272.972	1020.5	466.603	9.364	1769.439
	Earth	131.009	569.993	553.22	26.63	1280.852
	Subtotal	578.176	1691.786	1034.046	36.407	3340.415
	Condition (%)	17.31%	50.65%	30.96%	1.09%	100.00%
UasinGishu	Paved	206.557	232.339	24.682	6.193	469.771
	Gravel	817.064	1392.689	314.228	25.29	2549.271
	Earth	359.151	1408.656	963.932	10.834	2742.573
	Subtotal	1382.772	3033.684	1302.842	42.317	5761.615
	Condition (%)	24.00%	52.65%	22.61%	0.73%	100.00%
Transzoia	Paved	46.041	145.345	5.771	0.0	197.157
	Gravel	306.602	621.555	195.944	5.778	1129.879
	Earth	268.388	626.106	543.666	13.65	1451.81
	Subtotal	621.031	1393.006	745.381	19.428	2778.846
	Condition (%)	22.35%	50.13%	26.82%	0.70%	100.00%
ElegeyoMarak	Paved	162.059	25.62	11.257	5.104	204.04
	Gravel	240.132	682.682	363.225	28.173	1314.212
	Earth	98.194	269.422	288.627	20.819	677.062
	Subtotal	500.385	977.724	663.109	54.096	2195.314
	Condition (%)	22.79%	44.54%	30.21%	2.46%	100.00%
WestPokot	Paved	62.057	69.237	20.25	30.627	182.171
	Gravel	193.956	783.627	391.153	29.836	1398.572
	Earth	61.117	250.661	651.554	7.714	971.046
	Subtotal	317.13	1103.525	1062.957	68.177	2551.789
	Condition (%)	12.43%	43.25%	41.66%	2.67%	100.00%
Baringo	Paved	191.83	270.842	37.768	0.0	500.44
	Gravel	40.332	537.449	428.313	63.228	1069.322
	Earth	170.341	573.141	1488.527	27.82	2259.829
	Subtotal	402.503	1381.432	1954.608	91.048	3829.591
	Condition (%)	10.51%	36.07%	51.04%	2.38%	100.00%
Marsabit	Paved	137.897	249.03	1.733	0.287	388.947
	Gravel	143.016	1678.447	1486.345	12.869	3320.677
	Earth	57.494	895.163	992.615	0.0	1945.272
	Subtotal	338.407	2822.64	2480.693	13.156	5654.896
	Condition (%)	5.98%	49.91%	43.87%	0.23%	100.00%
Samburu	Paved	108.663	1.119	1.77	0.0	111.552
	Gravel	56.915	789.855	345.535	1.961	1194.266
	Earth	129.286	528.879	791.968	80.835	1530.968
	Subtotal	294.864	1319.853	1139.273	82.796	2836.786
	Condition (%)	10.39%	46.53%	40.16%	2.92%	100.00%
Turkana	Paved	164.783	149.565	109.71	59.41	483.468
	Gravel	126.589	921.119	497.88	46.278	1591.866
	Earth	176.511	1351.36	2567.851	19.387	4115.109
	Subtotal	467.883	2422.044	3175.441	125.075	6190.443
	Condition (%)	7.56%	39.13%	51.30%	2.02%	100.00%
	Subtotal	13877.719	34235.08	29940.986	1127.648	79181.433
	OVERALL % Condition	17.53%	43.24%	37.81%	1.42%	100.00%

**TABLE 2A: SUMMARY OF SURFACE TYPE AND ROAD  
CONDITION PER ROAD CLASS (CLASSIFIED  
ROADS)**



**TABLE 2A: SUMMARY OF SURFACE TYPE AND ROAD CONDITION PER ROAD CLASS (CLASSIFIED ROADS)**

ROAD CLASS	SURFACE TYPE	LENGTH (Km)				Total Length (km)
		Good	Fair	Poor	Under Construction	
A	Paved	864.066	780.246	120.58	34.153	1799.045
	Gravel	0.0	180.996	215.753	5.985	402.734
	Earth	0.0	200.017	316.038	0.0	516.055
	<b>Subtotal</b>	<b>864.066</b>	<b>1161.259</b>	<b>652.371</b>	<b>40.138</b>	<b>2717.834</b>
	<b>Condition (%)</b>	<b>31.79%</b>	<b>42.73%</b>	<b>24.00%</b>	<b>1.48%</b>	<b>100.00%</b>
B	Paved	890.03	600.33	8.447	71.099	1569.906
	Gravel	182.752	659.777	779.781	43.597	1665.907
	Earth	53.418	156.917	499.12	0.0	709.455
	<b>Subtotal</b>	<b>1126.2</b>	<b>1417.024</b>	<b>1287.348</b>	<b>114.696</b>	<b>3945.268</b>
	<b>Condition (%)</b>	<b>28.55%</b>	<b>35.92%</b>	<b>32.63%</b>	<b>2.91%</b>	<b>100.00%</b>
B_urb	Paved	5.604	28.799	7.358	0.0	41.761
	Gravel	0.723	5.033	0.0	0.0	5.756
	Earth	0.0	0.704	0.12	0.0	0.824
	<b>Subtotal</b>	<b>6.327</b>	<b>34.536</b>	<b>7.478</b>	<b>0.0</b>	<b>48.341</b>
	<b>Condition (%)</b>	<b>13.09%</b>	<b>71.44%</b>	<b>15.47%</b>	<b>0.00%</b>	<b>100.00%</b>
C	Paved	641.017	820.22	81.758	15.818	1558.813
	Gravel	824.014	2612.431	896.581	166.699	4499.725
	Earth	63.331	454.796	1008.21	0.0	1526.337
	<b>Subtotal</b>	<b>1528.362</b>	<b>3887.447</b>	<b>1986.549</b>	<b>182.517</b>	<b>7584.875</b>
	<b>Condition (%)</b>	<b>20.15%</b>	<b>51.25%</b>	<b>26.19%</b>	<b>2.41%</b>	<b>100.00%</b>
C_urb	Paved	23.778	68.898	25.117	2.068	119.861
	Gravel	150.091	322.459	115.913	19.013	607.476
	Earth	29.24	38.432	44.583	4.467	116.722
	<b>Subtotal</b>	<b>203.109</b>	<b>429.789</b>	<b>185.613</b>	<b>25.548</b>	<b>844.059</b>
	<b>Condition (%)</b>	<b>24.06%</b>	<b>50.92%</b>	<b>21.99%</b>	<b>3.03%</b>	<b>100.00%</b>
D	Paved	43.448	84.599	16.574	2.495	147.116
	Gravel	668.145	1342.353	813.926	34.224	2858.648
	Earth	97.447	166.008	458.498	51.146	773.099
	<b>Subtotal</b>	<b>809.04</b>	<b>1592.96</b>	<b>1288.998</b>	<b>87.865</b>	<b>3778.863</b>
	<b>Condition (%)</b>	<b>21.41%</b>	<b>42.15%</b>	<b>34.11%</b>	<b>2.33%</b>	<b>100.00%</b>
E	Paved	68.214	160.025	38.465	3.303	270.007
	Gravel	1029.845	2356.145	834.211	54.257	4274.458
	Earth	154.632	432.439	600.178	4.5	1191.749
	<b>Subtotal</b>	<b>1252.691</b>	<b>2948.609</b>	<b>1472.854</b>	<b>62.06</b>	<b>5736.214</b>
	<b>Condition (%)</b>	<b>21.84%</b>	<b>51.40%</b>	<b>25.68%</b>	<b>1.08%</b>	<b>100.00%</b>
F	Paved	20.523	49.735	23.68	0.103	94.041
	Gravel	388.096	1284.922	663.347	41.143	2377.508
	Earth	124.183	361.505	461.598	7.711	954.997
	<b>Subtotal</b>	<b>532.802</b>	<b>1696.162</b>	<b>1148.625</b>	<b>48.957</b>	<b>3426.546</b>
	<b>Condition (%)</b>	<b>15.55%</b>	<b>49.50%</b>	<b>33.52%</b>	<b>1.43%</b>	<b>100.00%</b>
G	Paved	95.689	128.071	85.209	2.242	311.211
	Gravel	2411.619	5968.561	3799.47	132.191	12311.841
	Earth	1284.473	4910.422	6163.214	67.965	12426.074

ROAD CLASS	SURFACE TYPE	LENGTH (Km)				Total Length (km)
		Good	Fair	Poor	Under Construction	
	<b>Subtotal</b>	<b>3791.781</b>	<b>11007.054</b>	<b>10047.893</b>	<b>202.398</b>	<b>25049.126</b>
	<b>Condition (%)</b>	<b>15.14%</b>	<b>43.94%</b>	<b>40.11%</b>	<b>0.81%</b>	<b>100.00%</b>
<b>Overall for All Classes</b>	<b>Paved</b>	2652.369	2720.923	407.188	131.281	5911.761
	<b>Gravel</b>	5655.285	14732.677	8118.982	497.109	29004.053
	<b>Earth</b>	1806.724	6721.24	9551.559	135.789	18215.312
		9.92%	36.90%	52.44%	0.75%	100.00%
	<b>Subtotal</b>	<b>10114.378</b>	<b>24174.84</b>	<b>18077.729</b>	<b>764.179</b>	<b>53131.126</b>
	<b>Condition (%)</b>	<b>19.04%</b>	<b>45.50%</b>	<b>34.02%</b>	<b>1.44%</b>	<b>100.00%</b>

**TABLE 2B: SUMMARY OF SURFACE TYPE AND ROAD  
CONDITION PER ROAD CLASS (CLASSIFIED  
ROADS) PER COUNTY**

**TABLE 2B: SUMMARY OF SURFACE TYPE AND ROAD CONDITION PER ROAD CLASS PER COUNTY (CLASSIFIED ROAD**

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
Bomet	B	Paved	46.03	20.094	0.0	0.0	66.124
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>46.03</b>	<b>20.094</b>			<b>66.124</b>
		Condition (%)	<b>69.61%</b>	<b>30.39%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	C	Paved	41.398	61.829	3.981	0.0	107.208
		Gravel	34.448	128.025	103.446	8.181	274.1
		Earth	0.0	1.771	2.164	0.0	3.935
		<b>Subtotal</b>	<b>75.846</b>	<b>191.625</b>	<b>109.591</b>	<b>8.181</b>	<b>385.243</b>
		Condition (%)	<b>19.69%</b>	<b>49.74%</b>	<b>28.45%</b>	<b>2.12%</b>	<b>100.00%</b>
	C_urb	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	6.983	31.797	29.938	1.756	70.474
		Earth	0.0	0.061	0.263	0.0	0.324
		<b>Subtotal</b>	<b>6.983</b>	<b>31.858</b>	<b>30.201</b>	<b>1.756</b>	<b>70.798</b>
		Condition (%)	<b>9.86%</b>	<b>45.00%</b>	<b>42.66%</b>	<b>2.48%</b>	<b>100.00%</b>
D	Paved	0.0	0.0	0.0	0.0	0.0	
	Gravel	6.649	38.769	54.593	0.0	100.011	
	Earth	0.0	0.896	0.0	0.0	0.896	
	<b>Subtotal</b>	<b>6.649</b>	<b>39.665</b>	<b>54.593</b>		<b>100.907</b>	
	Condition (%)	<b>6.59%</b>	<b>39.31%</b>	<b>54.10%</b>	<b>0.00%</b>	<b>100.00%</b>	
E	Paved	1.004	1.286	0.0	0.0	2.29	
	Gravel	24.394	119.768	100.166	0.0	244.328	
	Earth	0.0	2.262	3.853	0.0	6.115	
	<b>Subtotal</b>	<b>25.398</b>	<b>123.316</b>	<b>104.019</b>		<b>252.733</b>	
	Condition (%)	<b>10.05%</b>	<b>48.79%</b>	<b>41.16%</b>	<b>0.00%</b>	<b>100.00%</b>	
F	Paved	4.317	4.353	0.0	0.0	8.67	
	Gravel	12.159	47.692	62.618	0.0	122.469	
	Earth	0.0	0.883	13.299	0.0	14.182	
	<b>Subtotal</b>	<b>16.476</b>	<b>52.928</b>	<b>75.917</b>		<b>145.321</b>	
	Condition (%)	<b>11.34%</b>	<b>36.42%</b>	<b>52.24%</b>	<b>0.00%</b>	<b>100.00%</b>	
G	Paved	9.419	2.788	4.83	0.0	17.037	
	Gravel	80.366	238.075	357.421	16.817	692.679	
	Earth	5.425	67.856	215.396	1.096	289.773	
	<b>Subtotal</b>	<b>95.21</b>	<b>308.719</b>	<b>577.647</b>	<b>17.913</b>	<b>999.489</b>	
	Condition (%)	<b>9.53%</b>	<b>30.89%</b>	<b>57.79%</b>	<b>1.79%</b>	<b>100.00%</b>	
	<b>Bomet Total</b>	<b>272.592</b>	<b>768.205</b>	<b>951.968</b>	<b>27.85</b>	<b>2020.615</b>	
	<b>Bomet Overall Con</b>	<b>13.49%</b>	<b>38.02%</b>	<b>47.11%</b>	<b>1.38%</b>	<b>100.00%</b>	
Kericho	A	Paved	86.759	6.141	0.0	0.0	92.9
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>86.759</b>	<b>6.141</b>			<b>92.9</b>
		Condition (%)	<b>93.39%</b>	<b>6.61%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	B	Paved	41.662	14.116	0.248	0.0	56.026
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>41.662</b>	<b>14.116</b>	<b>0.248</b>		<b>56.026</b>
		Condition (%)	<b>74.36%</b>	<b>25.20%</b>	<b>0.44%</b>	<b>0.00%</b>	<b>100.00%</b>
	C	Paved	81.072	78.363	13.248	1.004	173.687
		Gravel	5.63	69.173	53.727	13.072	141.602
		Earth	0.0	0.563	1.081	0.0	1.644
		<b>Subtotal</b>	<b>86.702</b>	<b>148.099</b>	<b>68.056</b>	<b>14.076</b>	<b>316.933</b>
		Condition (%)	<b>27.36%</b>	<b>46.73%</b>	<b>21.47%</b>	<b>4.44%</b>	<b>100.00%</b>
C_urb	Paved	1.037	0.691	0.0	0.0	1.728	
	Gravel	3.321	15.064	3.773	0.0	22.158	
	Earth	0.0	0.0	9.132	0.0	9.132	
	<b>Subtotal</b>	<b>4.358</b>	<b>15.755</b>	<b>12.905</b>		<b>33.018</b>	
	Condition (%)	<b>13.20%</b>	<b>47.72%</b>	<b>39.08%</b>	<b>0.00%</b>	<b>100.00%</b>	
D	Paved	1.762	13.554	0.578	0.0	15.894	

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		Gravel	44.176	50.474	17.532	0.0	112.182
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>45.938</b>	<b>64.028</b>	<b>18.11</b>		<b>128.076</b>
		Condition (%)	<b>35.87%</b>	<b>49.99%</b>	<b>14.14%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	8.033	10.592	1.417	0.0	20.042
		Gravel	53.54	90.756	72.809	0.0	217.105
		Earth	0.971	3.847	13.236	0.0	18.054
		<b>Subtotal</b>	<b>62.544</b>	<b>105.195</b>	<b>87.462</b>		<b>255.201</b>
		Condition (%)	<b>24.51%</b>	<b>41.22%</b>	<b>34.27%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	1.942	0.416	0.866	0.0	3.224
		Gravel	4.785	66.674	8.772	8.586	88.817
		Earth	0.316	20.843	7.545	0.0	28.704
		<b>Subtotal</b>	<b>7.043</b>	<b>87.933</b>	<b>17.183</b>	<b>8.586</b>	<b>120.745</b>
		Condition (%)	<b>5.83%</b>	<b>72.83%</b>	<b>14.23%</b>	<b>7.11%</b>	<b>100.00%</b>
	<b>G</b>	Paved	0.659	4.882	8.505	0.0	14.046
		Gravel	104.412	289.551	182.057	8.534	584.554
		Earth	8.331	80.494	106.156	0.961	195.942
		<b>Subtotal</b>	<b>113.402</b>	<b>374.927</b>	<b>296.718</b>	<b>9.495</b>	<b>794.542</b>
		Condition (%)	<b>14.27%</b>	<b>47.19%</b>	<b>37.34%</b>	<b>1.20%</b>	<b>100.00%</b>
		<b>kericho Total</b>	<b>448.408</b>	<b>816.194</b>	<b>500.682</b>	<b>32.157</b>	<b>1797.441</b>
		<b>kericho Overall Cor</b>	<b>24.95%</b>	<b>45.41%</b>	<b>27.86%</b>	<b>1.79%</b>	<b>100.00%</b>
<b>Nyamira</b>	<b>B</b>	Paved	65.171	30.419	0.059	3.899	99.548
		Gravel	0.0	0.853	0.0	13.865	14.718
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>65.171</b>	<b>31.272</b>	<b>0.059</b>	<b>17.764</b>	<b>114.266</b>
		Condition (%)	<b>57.03%</b>	<b>27.37%</b>	<b>0.05%</b>	<b>15.55%</b>	<b>100.00%</b>
	<b>C</b>	Paved	10.463	16.132	0.0	1.692	28.287
		Gravel	14.202	73.339	23.967	12.793	124.301
		Earth	0.0	0.227	4.552	0.0	4.779
		<b>Subtotal</b>	<b>24.665</b>	<b>89.698</b>	<b>28.519</b>	<b>14.485</b>	<b>157.367</b>
		Condition (%)	<b>15.67%</b>	<b>57.00%</b>	<b>18.12%</b>	<b>9.20%</b>	<b>100.00%</b>
	<b>D</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	12.897	60.333	36.582	5.617	115.429
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>12.897</b>	<b>60.333</b>	<b>36.582</b>	<b>5.617</b>	<b>115.429</b>
		Condition (%)	<b>11.17%</b>	<b>52.27%</b>	<b>31.69%</b>	<b>4.87%</b>	<b>100.00%</b>
	<b>E</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	41.694	65.45	14.202	0.0	121.346
		Earth	0.0	0.415	0.0	0.0	0.415
		<b>Subtotal</b>	<b>41.694</b>	<b>65.865</b>	<b>14.202</b>		<b>121.761</b>
		Condition (%)	<b>34.24%</b>	<b>54.09%</b>	<b>11.66%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.0	0.229	0.0	0.0	0.229
		Gravel	13.254	31.949	11.295	5.292	61.79
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>13.254</b>	<b>32.178</b>	<b>11.295</b>	<b>5.292</b>	<b>62.019</b>
		Condition (%)	<b>21.37%</b>	<b>51.88%</b>	<b>18.21%</b>	<b>8.53%</b>	<b>100.00%</b>
	<b>G</b>	Gravel	85.958	191.729	166.947	29.322	473.956
		Earth	23.284	36.049	35.942	0.211	95.486
		<b>Subtotal</b>	<b>109.242</b>	<b>227.778</b>	<b>202.889</b>	<b>29.533</b>	<b>569.442</b>
		Condition (%)	<b>19.18%</b>	<b>40.00%</b>	<b>35.63%</b>	<b>5.19%</b>	<b>100.00%</b>
		<b>Nyamira Total</b>	<b>266.923</b>	<b>507.124</b>	<b>293.546</b>	<b>72.691</b>	<b>1140.284</b>
		<b>Nyamira Overall Co</b>	<b>23.41%</b>	<b>44.47%</b>	<b>25.74%</b>	<b>6.37%</b>	<b>100.00%</b>
<b>Kisii</b>	<b>A</b>	Paved	18.119	13.075	0.0	0.0	31.194
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>18.119</b>	<b>13.075</b>			<b>31.194</b>
		Condition (%)	<b>58.08%</b>	<b>41.92%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	73.992	27.206	0.0	0.0	101.198
		Gravel	0.271	13.502	0.0	0.0	13.773
		Earth	0.0	0.0	0.0	0.0	0.0

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		<b>Subtotal</b>	<b>74.263</b>	<b>40.708</b>			<b>114.971</b>
		Condition (%)	<b>64.59%</b>	<b>35.41%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B_urb</b>	Paved	1.416	2.905	0.192	0.0	4.513
		Gravel	0.723	2.089	0.0	0.0	2.812
		Earth	0.0	0.704	0.0	0.0	0.704
		<b>Subtotal</b>	<b>2.139</b>	<b>5.698</b>	<b>0.192</b>		<b>8.029</b>
		Condition (%)	<b>26.64%</b>	<b>70.97%</b>	<b>2.39%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C</b>	Paved	51.573	45.777	4.834	7.476	109.66
		Gravel	23.261	114.522	63.631	3.301	204.715
		Earth	5.314	1.014	0.816	0.0	7.144
		<b>Subtotal</b>	<b>80.148</b>	<b>161.313</b>	<b>69.281</b>	<b>10.777</b>	<b>321.519</b>
		Condition (%)	<b>24.93%</b>	<b>50.17%</b>	<b>21.55%</b>	<b>3.35%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	4.55	12.62	1.778	0.0	18.948
		Gravel	9.409	10.202	12	0.0	31.611
		Earth	0.0	2.939	0.0	0.0	2.939
		<b>Subtotal</b>	<b>13.959</b>	<b>25.761</b>	<b>13.778</b>		<b>53.498</b>
		Condition (%)	<b>26.09%</b>	<b>48.15%</b>	<b>25.75%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	Paved	2.088	16.963	2.317	2.495	23.863
		Gravel	15.295	63.734	52.387	0.882	132.298
		Earth	1.924	3.08	2.321	0.0	7.325
		<b>Subtotal</b>	<b>19.307</b>	<b>83.777</b>	<b>57.025</b>	<b>3.377</b>	<b>163.486</b>
		Condition (%)	<b>11.81%</b>	<b>51.24%</b>	<b>34.88%</b>	<b>2.07%</b>	<b>100.00%</b>
	<b>E</b>	Paved	5.31	9.151	4.163	0.0	18.624
		Gravel	62.452	93.128	48.989	0.0	204.569
		Earth	3.696	15.123	1.909	0.0	20.728
		<b>Subtotal</b>	<b>71.458</b>	<b>117.402</b>	<b>55.061</b>		<b>243.921</b>
		Condition (%)	<b>29.30%</b>	<b>48.13%</b>	<b>22.57%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.169	1.983	0.0	0.0	2.152
		Gravel	25.182	77.804	23.521	0.0	126.507
		Earth	3.354	1.707	0.862	0.0	5.923
		<b>Subtotal</b>	<b>28.705</b>	<b>81.494</b>	<b>24.383</b>		<b>134.582</b>
		Condition (%)	<b>21.33%</b>	<b>60.55%</b>	<b>18.12%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	7.297	11.016	5.784	0.0	24.097
		Gravel	143.495	392.557	277.906	6.274	820.232
		Earth	41.903	131.514	127.676	0.0	301.093
		<b>Subtotal</b>	<b>192.695</b>	<b>535.087</b>	<b>411.366</b>	<b>6.274</b>	<b>1145.422</b>
		Condition (%)	<b>16.82%</b>	<b>46.72%</b>	<b>35.91%</b>	<b>0.55%</b>	<b>100.00%</b>
<b>Kisii Total</b>			<b>500.793</b>	<b>1064.315</b>	<b>631.086</b>	<b>20.428</b>	<b>2216.622</b>
<b>Kisii Overall Condition%</b>			<b>22.59%</b>	<b>48.02%</b>	<b>28.47%</b>	<b>0.92%</b>	<b>100.00%</b>
<b>Migori</b>	<b>A</b>	Paved	39.043	27.487	0.45	0.0	66.98
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>39.043</b>	<b>27.487</b>	<b>0.45</b>		<b>66.98</b>
		Condition (%)	<b>58.29%</b>	<b>41.04%</b>	<b>0.67%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	39.116	31.743	0.04	0.0	70.899
		Gravel	28.426	0.879	0.0	26.4	55.705
		Earth	1.136	0.224	0.404	0.0	1.764
		<b>Subtotal</b>	<b>68.678</b>	<b>32.846</b>	<b>0.444</b>	<b>26.4</b>	<b>128.368</b>
		Condition (%)	<b>53.50%</b>	<b>25.59%</b>	<b>0.35%</b>	<b>20.57%</b>	<b>100.00%</b>
	<b>C</b>	Paved	22.248	26.228	0.05	4.358	52.884
		Gravel	68.092	87.176	24.784	7.178	187.23
		Earth	20.83	2.41	5.745	0.0	28.985
		<b>Subtotal</b>	<b>111.17</b>	<b>115.814</b>	<b>30.579</b>	<b>11.536</b>	<b>269.099</b>
		Condition (%)	<b>41.31%</b>	<b>43.04%</b>	<b>11.36%</b>	<b>4.29%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	0.585	1.375	0.129	0.0	2.089
		Gravel	26.723	32.345	14.611	0.0	73.679
		Earth	0.085	0.258	0.0	0.0	0.343
		<b>Subtotal</b>	<b>27.393</b>	<b>33.978</b>	<b>14.74</b>		<b>76.111</b>
		Condition (%)	<b>35.99%</b>	<b>44.64%</b>	<b>19.37%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	Paved	0.27	0.207	0.0	0.0	0.477

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		Gravel	60.381	83.668	37.411	0.0	181.46
		Earth	0.0	14.444	35.297	0.0	49.741
		<b>Subtotal</b>	<b>60.651</b>	<b>98.319</b>	<b>72.708</b>		<b>231.678</b>
		<b>Condition (%)</b>	<b>26.18%</b>	<b>42.44%</b>	<b>31.38%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	0.379	0.0	1.198	0.0	1.577
		Gravel	74.38	109.159	14.963	0.0	198.502
		Earth	6.241	59.563	15.889	0.0	81.693
		<b>Subtotal</b>	<b>81</b>	<b>168.722</b>	<b>32.05</b>		<b>281.772</b>
		<b>Condition (%)</b>	<b>28.75%</b>	<b>59.88%</b>	<b>11.37%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	1.524	3.669	0.0	0.0	5.193
		Gravel	45.781	71.22	31.94	0.0	148.941
		Earth	0.0	12.461	19.284	0.0	31.745
		<b>Subtotal</b>	<b>47.305</b>	<b>87.35</b>	<b>51.224</b>		<b>185.879</b>
		<b>Condition (%)</b>	<b>25.45%</b>	<b>46.99%</b>	<b>27.56%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	9.701	1.632	1.874	0.0	13.207
		Gravel	164.355	206.369	153.867	2.106	526.697
		Earth	15.506	170.244	215.323	0.0	401.073
		<b>Subtotal</b>	<b>189.562</b>	<b>378.245</b>	<b>371.064</b>	<b>2.106</b>	<b>940.977</b>
		<b>Condition (%)</b>	<b>20.15%</b>	<b>40.20%</b>	<b>39.43%</b>	<b>0.22%</b>	<b>100.00%</b>
		<b>Migori Total</b>	<b>624.802</b>	<b>942.761</b>	<b>573.259</b>	<b>40.042</b>	<b>2180.864</b>
		<b>Migori Overall Con</b>	<b>28.65%</b>	<b>43.23%</b>	<b>26.29%</b>	<b>1.84%</b>	<b>100.00%</b>
<b>Homabay</b>	<b>A</b>	Paved	22.864	19.792	0.105	0.0	42.761
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>22.864</b>	<b>19.792</b>	<b>0.105</b>		<b>42.761</b>
		<b>Condition (%)</b>	<b>53.47%</b>	<b>46.29%</b>	<b>0.25%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	116.107	29.391	0.0	6.85	152.348
		Gravel	51.282	7.303	0.415	0.0	59
		Earth	0.485	0.0	0.128	0.0	0.613
		<b>Subtotal</b>	<b>167.874</b>	<b>36.694</b>	<b>0.543</b>	<b>6.85</b>	<b>211.961</b>
		<b>Condition (%)</b>	<b>79.20%</b>	<b>17.31%</b>	<b>0.26%</b>	<b>3.23%</b>	<b>100.00%</b>
	<b>C</b>	Paved	1.486	35.661	0.0	0.599	37.746
		Gravel	81.312	155.488	25.309	16.492	278.601
		Earth	0.0	1.514	32.982	0.0	34.496
		<b>Subtotal</b>	<b>82.798</b>	<b>192.663</b>	<b>58.291</b>	<b>17.091</b>	<b>350.843</b>
		<b>Condition (%)</b>	<b>23.60%</b>	<b>54.91%</b>	<b>16.61%</b>	<b>4.87%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	0.0	43.096	0.891	0.039	44.026
		Earth	0.0	0.0	13.754	0.0	13.754
		<b>Subtotal</b>		<b>43.096</b>	<b>14.645</b>	<b>0.039</b>	<b>57.78</b>
		<b>Condition (%)</b>	<b>0.00%</b>	<b>74.59%</b>	<b>25.35%</b>	<b>0.07%</b>	<b>100.00%</b>
	<b>D</b>	Paved	0.0	0.277	0.0	0.0	0.277
		Gravel	69.498	75.664	15.574	0.0	160.736
		Earth	0.242	6.233	13.121	0.0	19.596
		<b>Subtotal</b>	<b>69.74</b>	<b>82.174</b>	<b>28.695</b>		<b>180.609</b>
		<b>Condition (%)</b>	<b>38.61%</b>	<b>45.50%</b>	<b>15.89%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	0.501	2.417	0.594	0.0	3.512
		Gravel	33.431	118.15	73.837	0.0	225.418
		Earth	15.427	25.057	71.139	0.0	111.623
		<b>Subtotal</b>	<b>49.359</b>	<b>145.624</b>	<b>145.57</b>		<b>340.553</b>
		<b>Condition (%)</b>	<b>14.49%</b>	<b>42.76%</b>	<b>42.75%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.088	0.0	0.266	0.0	0.354
		Gravel	23.218	99.523	27.195	0.0	149.936
		Earth	21.753	52.151	60.175	0.0	134.079
		<b>Subtotal</b>	<b>45.059</b>	<b>151.674</b>	<b>87.636</b>		<b>284.369</b>
		<b>Condition (%)</b>	<b>15.85%</b>	<b>53.34%</b>	<b>30.82%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	1.375	4.013	1.991	0.0	7.379
		Gravel	113.269	259.5	122.603	1.217	496.589
		Earth	43.699	244.829	298.008	0.0	586.536
		<b>Subtotal</b>	<b>158.343</b>	<b>508.342</b>	<b>422.602</b>	<b>1.217</b>	<b>1090.504</b>

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		Condition (%)	14.52%	46.62%	38.75%	0.11%	100.00%
		Homabay Total	596.037	1180.059	758.087	25.197	2559.38
		Homabay Overall C	23.29%	46.11%	29.62%	0.98%	100.00%
Kisumu	A	Paved	58.041	66.032	1.339	0.0	125.412
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		Subtotal	58.041	66.032	1.339		125.412
		Condition (%)	46.28%	52.65%	1.07%	0.00%	100.00%
	B	Paved	35.482	36.005	0.072	0.0	71.559
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		Subtotal	35.482	36.005	0.072		71.559
		Condition (%)	49.58%	50.32%	0.10%	0.00%	100.00%
	B_urb	Paved	1.659	11.175	4.031	0.0	16.865
		Gravel	0.0	2.944	0.0	0.0	2.944
		Earth	0.0	0.0	0.12	0.0	0.12
		Subtotal	1.659	14.119	4.151		19.929
		Condition (%)	8.32%	70.85%	20.83%	0.00%	100.00%
C	Paved	20.992	25.955	36.525	0.0	83.472	
	Gravel	36.73	69.972	43.674	0.0	150.376	
	Earth	0.0	0.391	10.104	0.0	10.495	
	Subtotal	57.722	96.318	90.303		244.343	
	Condition (%)	23.62%	39.42%	36.96%	0.00%	100.00%	
C_urb	Paved	2.611	11.587	2.87	0.0	17.068	
	Gravel	3.024	24.259	9.807	3.319	40.409	
	Earth	0.243	0.288	0.927	0.0	1.458	
	Subtotal	5.878	36.134	13.604	3.319	58.935	
	Condition (%)	9.97%	61.31%	23.08%	5.63%	100.00%	
D	Paved	1.279	10.516	0.0	0.0	11.795	
	Gravel	39.58	38.046	37.421	0.0	115.047	
	Earth	0.0	0.0	12.443	0.0	12.443	
	Subtotal	40.859	48.562	49.864		139.285	
	Condition (%)	29.33%	34.87%	35.80%	0.00%	100.00%	
E	Paved	7.818	19.743	11.476	0.0	39.037	
	Gravel	49.765	80.677	58.345	0.0	188.787	
	Earth	0.0	26.51	24.006	0.0	50.516	
	Subtotal	57.583	126.93	93.827		278.34	
	Condition (%)	20.69%	45.60%	33.71%	0.00%	100.00%	
F	Paved	1.837	16.174	4.955	0.0	22.966	
	Gravel	21.796	38.261	35.406	0.0	95.463	
	Earth	0.0	7.55	36.777	0.0	44.327	
	Subtotal	23.633	61.985	77.138		162.756	
	Condition (%)	14.52%	38.08%	47.39%	0.00%	100.00%	
G	Paved	8.87	15.566	18.406	0.0	42.842	
	Gravel	85.858	290.568	318.878	6.038	701.342	
	Earth	19.404	285.441	562.92	0.0	867.765	
	Subtotal	114.132	591.575	900.204	6.038	1611.949	
	Condition (%)	7.08%	36.70%	55.85%	0.37%	100.00%	
		Kisumu Total	394.989	1077.66	1230.502	9.357	2712.508
		Kisumu Overall Cor	14.56%	39.73%	45.36%	0.34%	100.00%
Siaya	A	Paved	0.033	45.183	0.0	0.0	45.216
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		Subtotal	0.033	45.183			45.216
		Condition (%)	0.07%	99.93%	0.00%	0.00%	100.00%
	B	Paved	61.349	69.704	0.656	0.0	131.709
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.271	0.0	0.0	0.271
		Subtotal	61.349	69.975	0.656		131.98
		Condition (%)	46.48%	53.02%	0.50%	0.00%	100.00%



COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
	<b>C</b>	Paved	81.308	54.916	1.89	0.0	138.114
		Gravel	21.394	97.163	19.039	17.011	154.607
		Earth	2.8	8.122	4.027	0.0	14.949
		<b>Subtotal</b>	<b>105.502</b>	<b>160.201</b>	<b>24.956</b>	<b>17.011</b>	<b>307.67</b>
		<b>Condition (%)</b>	<b>34.29%</b>	<b>52.07%</b>	<b>8.11%</b>	<b>5.53%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	4.556	2.385	1.051	0.0	7.992
		Gravel	4.971	6.267	7.019	0.0	18.257
		Earth	1.308	1.192	6.815	4.467	13.782
		<b>Subtotal</b>	<b>10.835</b>	<b>9.844</b>	<b>14.885</b>	<b>4.467</b>	<b>40.031</b>
		<b>Condition (%)</b>	<b>27.07%</b>	<b>24.59%</b>	<b>37.18%</b>	<b>11.16%</b>	<b>100.00%</b>
	<b>D</b>	Paved	0.0	0.449	0.0	0.0	0.449
		Gravel	40.187	58.016	39.475	0.0	137.678
		Earth	1.419	1.939	5.443	0.0	8.801
		<b>Subtotal</b>	<b>41.606</b>	<b>60.404</b>	<b>44.918</b>		<b>146.928</b>
		<b>Condition (%)</b>	<b>28.32%</b>	<b>41.11%</b>	<b>30.57%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	1.811	23.497	0.337	0.0	25.645
		Gravel	82.024	154.699	46.42	0.0	283.143
		Earth	3.432	12.844	21.579	0.0	37.855
		<b>Subtotal</b>	<b>87.267</b>	<b>191.04</b>	<b>68.336</b>		<b>346.643</b>
		<b>Condition (%)</b>	<b>25.17%</b>	<b>55.11%</b>	<b>19.71%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.187	1.157	0.376	0.0	1.72
		Gravel	36.266	94.811	8.715	0.0	139.792
		Earth	0.869	20.516	20.904	0.0	42.289
		<b>Subtotal</b>	<b>37.322</b>	<b>116.484</b>	<b>29.995</b>		<b>183.801</b>
		<b>Condition (%)</b>	<b>20.31%</b>	<b>63.38%</b>	<b>16.32%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	4.366	10.094	0.319	0.0	14.779
		Gravel	189.398	249.978	102.461	4.953	546.79
		Earth	63.723	118.384	162.166	1.833	346.106
		<b>Subtotal</b>	<b>257.487</b>	<b>378.456</b>	<b>264.946</b>	<b>6.786</b>	<b>907.675</b>
		<b>Condition (%)</b>	<b>28.37%</b>	<b>41.70%</b>	<b>29.19%</b>	<b>0.75%</b>	<b>100.00%</b>
		<b>Siaya Total</b>	<b>601.401</b>	<b>1031.587</b>	<b>448.692</b>	<b>28.264</b>	<b>2109.944</b>
		<b>Siaya Overall Cond</b>	<b>28.50%</b>	<b>48.89%</b>	<b>21.27%</b>	<b>1.34%</b>	<b>100.00%</b>
<b>Busia</b>	<b>A</b>	Paved	29.133	10.943	0.07	0.0	40.146
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>29.133</b>	<b>10.943</b>	<b>0.07</b>		<b>40.146</b>
		<b>Condition (%)</b>	<b>72.57%</b>	<b>27.26%</b>	<b>0.17%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	37.803	0.0	0.0	0.0	37.803
		Gravel	0.0	4.579	37.252	0.0	41.831
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>37.803</b>	<b>4.579</b>	<b>37.252</b>		<b>79.634</b>
		<b>Condition (%)</b>	<b>47.47%</b>	<b>5.75%</b>	<b>46.78%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C</b>	Paved	32.766	42.454	0.0	0.0	75.22
		Gravel	25.041	133.325	9.406	9.51	177.282
		Earth	4.612	0.21	0.221	0.0	5.043
		<b>Subtotal</b>	<b>62.419</b>	<b>175.989</b>	<b>9.627</b>	<b>9.51</b>	<b>257.545</b>
		<b>Condition (%)</b>	<b>24.24%</b>	<b>68.33%</b>	<b>3.74%</b>	<b>3.69%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	8.143	0.0	5.427	0.0	13.57
		Earth	8.8	5.411	0.0	0.0	14.211
		<b>Subtotal</b>	<b>16.943</b>	<b>5.411</b>	<b>5.427</b>		<b>27.781</b>
		<b>Condition (%)</b>	<b>60.99%</b>	<b>19.48%</b>	<b>19.53%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	38.998	37.631	22.735	0.0	99.364
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>38.998</b>	<b>37.631</b>	<b>22.735</b>		<b>99.364</b>
		<b>Condition (%)</b>	<b>39.25%</b>	<b>37.87%</b>	<b>22.88%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	1.234	7.84	0.0	0.0	9.074
		Gravel	58.389	116.583	27.559	0.0	202.531
		Earth	2.857	12.022	1.5	0.0	16.379

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		<b>Subtotal</b>	<b>62.48</b>	<b>136.445</b>	<b>29.059</b>	<b>0.00%</b>	<b>227.984</b>
		<b>Condition (%)</b>	<b>27.41%</b>	<b>59.85%</b>	<b>12.75%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	27.481	108.38	9.384	4.386	149.631
		Earth	8.946	5.689	5.417	2.779	22.831
		<b>Subtotal</b>	<b>36.427</b>	<b>114.069</b>	<b>14.801</b>	<b>7.165</b>	<b>172.462</b>
		<b>Condition (%)</b>	<b>21.12%</b>	<b>66.14%</b>	<b>8.58%</b>	<b>4.15%</b>	<b>100.00%</b>
	<b>G</b>	Paved	1.168	2.764	0.0	0.0	3.932
		Gravel	81.091	290.199	108.329	3.331	482.95
		Earth	19.741	76.392	58.124	3.663	157.92
		<b>Subtotal</b>	<b>102</b>	<b>369.355</b>	<b>166.453</b>	<b>6.994</b>	<b>644.802</b>
		<b>Condition (%)</b>	<b>15.82%</b>	<b>57.28%</b>	<b>25.81%</b>	<b>1.08%</b>	<b>100.00%</b>
		<b>Busia Total</b>	<b>386.203</b>	<b>854.422</b>	<b>285.424</b>	<b>23.669</b>	<b>1549.718</b>
		<b>Busia Overall Cond</b>	<b>24.92%</b>	<b>55.13%</b>	<b>18.42%</b>	<b>1.53%</b>	<b>100.00%</b>
<b>Bungoma</b>	<b>A</b>	Paved	40.318	39.043	0.023	0.0	79.384
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>40.318</b>	<b>39.043</b>	<b>0.023</b>		<b>79.384</b>
		<b>Condition (%)</b>	<b>50.79%</b>	<b>49.18%</b>	<b>0.03%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	0.042	10.924	0.0	0.0	10.966
		Gravel	0.324	0.0	53.981	0.0	54.305
		Earth	0.601	0.0	0.0	0.0	0.601
		<b>Subtotal</b>	<b>0.967</b>	<b>10.924</b>	<b>53.981</b>		<b>65.872</b>
		<b>Condition (%)</b>	<b>1.47%</b>	<b>16.58%</b>	<b>81.95%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B_urb</b>	Paved	0.013	4.074	0.0	0.0	4.087
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.013</b>	<b>4.074</b>			<b>4.087</b>
		<b>Condition (%)</b>	<b>0.32%</b>	<b>99.68%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C</b>	Paved	14.561	77.999	0.306	0.0	92.866
		Gravel	94.778	132.132	65.85	12.877	305.637
		Earth	3.788	0.587	2.385	0.0	6.76
		<b>Subtotal</b>	<b>113.127</b>	<b>210.718</b>	<b>68.541</b>	<b>12.877</b>	<b>405.263</b>
		<b>Condition (%)</b>	<b>27.91%</b>	<b>52.00%</b>	<b>16.91%</b>	<b>3.18%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	1.607	11.909	7.456	0.0	20.972
		Gravel	24.966	37.748	3.839	7.779	74.332
		Earth	11.569	10.983	0.0	0.0	22.552
		<b>Subtotal</b>	<b>38.142</b>	<b>60.64</b>	<b>11.295</b>	<b>7.779</b>	<b>117.856</b>
		<b>Condition (%)</b>	<b>32.36%</b>	<b>51.45%</b>	<b>9.58%</b>	<b>6.60%</b>	<b>100.00%</b>
	<b>D</b>	Paved	0.338	12.037	0.0	0.0	12.375
		Gravel	61.093	77.149	62.053	0.0	200.295
		Earth	0.458	1.441	0.321	0.0	2.22
		<b>Subtotal</b>	<b>61.889</b>	<b>90.627</b>	<b>62.374</b>		<b>214.89</b>
		<b>Condition (%)</b>	<b>28.80%</b>	<b>42.17%</b>	<b>29.03%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	0.505	1.804	2.66	0.0	4.969
		Gravel	87.227	134.417	16.662	0.0	238.306
		Earth	19.504	14.531	41.05	0.0	75.085
		<b>Subtotal</b>	<b>107.236</b>	<b>150.752</b>	<b>60.372</b>		<b>318.36</b>
		<b>Condition (%)</b>	<b>33.68%</b>	<b>47.35%</b>	<b>18.96%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.0	0.0	0.318	0.0	0.318
		Gravel	9.08	45.012	52.399	0.0	106.491
		Earth	9	16.693	10.609	0.0	36.302
		<b>Subtotal</b>	<b>18.08</b>	<b>61.705</b>	<b>63.326</b>		<b>143.111</b>
		<b>Condition (%)</b>	<b>12.63%</b>	<b>43.12%</b>	<b>44.25%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	2.529	8.02	9.063	0.0	19.612
		Gravel	187.763	221.698	174.413	0.0	583.874
		Earth	122.313	247.88	356.819	2.024	729.036
		<b>Subtotal</b>	<b>312.605</b>	<b>477.598</b>	<b>540.295</b>	<b>2.024</b>	<b>1332.522</b>
		<b>Condition (%)</b>	<b>23.46%</b>	<b>35.84%</b>	<b>40.55%</b>	<b>0.15%</b>	<b>100.00%</b>
		<b>Bungoma Total</b>	<b>692.377</b>	<b>1106.081</b>	<b>860.207</b>	<b>22.68</b>	<b>2681.345</b>

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		<b>Bungoma Overall C</b>	<b>25.82%</b>	<b>41.25%</b>	<b>32.08%</b>	<b>0.85%</b>	<b>100.00%</b>
<b>Kakamega</b>	<b>A</b>	Paved	40.339	39.221	0.102	0.0	79.662
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>40.339</b>	<b>39.221</b>	<b>0.102</b>		<b>79.662</b>
		<b>Condition (%)</b>	<b>50.64%</b>	<b>49.23%</b>	<b>0.13%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	15.784	53.635	0.485	0.0	69.904
		Gravel	26.526	0.0	0.0	1.115	27.641
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>42.31</b>	<b>53.635</b>	<b>0.485</b>	<b>1.115</b>	<b>97.545</b>
		<b>Condition (%)</b>	<b>43.37%</b>	<b>54.98%</b>	<b>0.50%</b>	<b>1.14%</b>	<b>100.00%</b>
	<b>C</b>	Paved	6.039	71.612	0.1	0.0	77.751
		Gravel	150.648	137.345	30.772	13.196	331.961
		Earth	4.838	2.392	0.0	0.0	7.23
		<b>Subtotal</b>	<b>161.525</b>	<b>211.349</b>	<b>30.872</b>	<b>13.196</b>	<b>416.942</b>
		<b>Condition (%)</b>	<b>38.74%</b>	<b>50.69%</b>	<b>7.40%</b>	<b>3.16%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	0.783	6.358	0.804	0.98	8.925
		Gravel	13.989	36.211	2.954	1.912	55.066
		Earth	0.0	1.054	0.575	0.0	1.629
		<b>Subtotal</b>	<b>14.772</b>	<b>43.623</b>	<b>4.333</b>	<b>2.892</b>	<b>65.62</b>
		<b>Condition (%)</b>	<b>22.51%</b>	<b>66.48%</b>	<b>6.60%</b>	<b>4.41%</b>	<b>100.00%</b>
	<b>D</b>	Paved	0.0	0.168	0.0	0.0	0.168
		Gravel	116.543	109.994	43.012	0.0	269.549
		Earth	19.793	7.388	7.284	0.0	34.465
		<b>Subtotal</b>	<b>136.336</b>	<b>117.55</b>	<b>50.296</b>		<b>304.182</b>
		<b>Condition (%)</b>	<b>44.82%</b>	<b>38.64%</b>	<b>16.53%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	1.06	13.452	1.559	0.0	16.071
		Gravel	165.063	164.463	17.396	8.648	355.57
		Earth	41.749	18.707	12.012	0.0	72.468
		<b>Subtotal</b>	<b>207.872</b>	<b>196.622</b>	<b>30.967</b>	<b>8.648</b>	<b>444.109</b>
		<b>Condition (%)</b>	<b>46.81%</b>	<b>44.27%</b>	<b>6.97%</b>	<b>1.95%</b>	<b>100.00%</b>
	<b>F</b>	Paved	1.456	3.766	0.365	0.103	5.69
		Gravel	35.048	68.585	28.489	10.097	142.219
		Earth	21.941	4.625	15.373	0.0	41.939
		<b>Subtotal</b>	<b>58.445</b>	<b>76.976</b>	<b>44.227</b>	<b>10.2</b>	<b>189.848</b>
		<b>Condition (%)</b>	<b>30.79%</b>	<b>40.55%</b>	<b>23.30%</b>	<b>5.37%</b>	<b>100.00%</b>
	<b>G</b>	Paved	3.299	8.918	3.172	0.078	15.467
		Gravel	310.944	529.817	150.871	20.165	1011.797
		Earth	218.211	337.263	555.384	7.943	1118.801
		<b>Subtotal</b>	<b>532.454</b>	<b>875.998</b>	<b>709.427</b>	<b>28.186</b>	<b>2146.065</b>
		<b>Condition (%)</b>	<b>24.81%</b>	<b>40.82%</b>	<b>33.06%</b>	<b>1.31%</b>	<b>100.00%</b>
		<b>Kakamega Total</b>	<b>1194.053</b>	<b>1614.974</b>	<b>870.709</b>	<b>64.237</b>	<b>3743.973</b>
		<b>Kakamega Overall C</b>	<b>31.89%</b>	<b>43.14%</b>	<b>23.26%</b>	<b>1.72%</b>	<b>100.00%</b>
<b>Vihiga</b>	<b>A</b>	Paved	19.128	11.563	1.64	0.0	32.331
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>19.128</b>	<b>11.563</b>	<b>1.64</b>		<b>32.331</b>
		<b>Condition (%)</b>	<b>59.16%</b>	<b>35.76%</b>	<b>5.07%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C</b>	Paved	35.138	40.83	1.097	0.0	77.065
		Gravel	7.421	19.116	12.66	14.886	54.083
		Earth	1.601	0.0	0.0	0.0	1.601
		<b>Subtotal</b>	<b>44.16</b>	<b>59.946</b>	<b>13.757</b>	<b>14.886</b>	<b>132.749</b>
		<b>Condition (%)</b>	<b>33.27%</b>	<b>45.16%</b>	<b>10.36%</b>	<b>11.21%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	4.814	7.94	4.157	0.0	16.911
		Gravel	13.654	2.479	1.191	0.0	17.324
		Earth	1.273	0.0	0.0	0.0	1.273
		<b>Subtotal</b>	<b>19.741</b>	<b>10.419</b>	<b>5.348</b>		<b>35.508</b>
		<b>Condition (%)</b>	<b>55.60%</b>	<b>29.34%</b>	<b>15.06%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	Paved	13.201	0.598	0.795	0.0	14.594
		Gravel	27.32	60.396	8.934	0.0	96.65

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		Earth	0.0	0.0	1.957	0.0	1.957
		<b>Subtotal</b>	<b>40.521</b>	<b>60.994</b>	<b>11.686</b>		<b>113.201</b>
		<b>Condition (%)</b>	<b>35.80%</b>	<b>53.88%</b>	<b>10.32%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	4.134	0.549	0.0	0.0	4.683
		Gravel	32.099	59.172	12.849	0.0	104.12
		Earth	0.338	2.19	0.352	0.0	2.88
		<b>Subtotal</b>	<b>36.571</b>	<b>61.911</b>	<b>13.201</b>		<b>111.683</b>
		<b>Condition (%)</b>	<b>32.75%</b>	<b>55.43%</b>	<b>11.82%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.0	0.373	2.331	0.0	2.704
		Gravel	3.557	6.209	2.402	0.0	12.168
		<b>Subtotal</b>	<b>3.557</b>	<b>6.582</b>	<b>4.733</b>		<b>14.872</b>
		<b>Condition (%)</b>	<b>23.92%</b>	<b>44.26%</b>	<b>31.82%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	0.119	2.519	2.464	0.0	5.102
		Gravel	29.524	123.068	54.25	0.421	207.263
		Earth	8.072	42.255	40.989	0.0	91.316
		<b>Subtotal</b>	<b>37.715</b>	<b>167.842</b>	<b>97.703</b>	<b>0.421</b>	<b>303.681</b>
		<b>Condition (%)</b>	<b>12.42%</b>	<b>55.27%</b>	<b>32.17%</b>	<b>0.14%</b>	<b>100.00%</b>
		<b>Vihiga Total</b>	<b>201.393</b>	<b>379.257</b>	<b>148.068</b>	<b>15.307</b>	<b>744.025</b>
		<b>Vihiga Overall Cond</b>	<b>27.07%</b>	<b>50.97%</b>	<b>19.90%</b>	<b>2.06%</b>	<b>100.00%</b>
<b>Nandi</b>	<b>A</b>	Paved	0.329	0.27	0.026	0.0	0.625
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.329</b>	<b>0.27</b>	<b>0.026</b>		<b>0.625</b>
		<b>Condition (%)</b>	<b>52.64%</b>	<b>43.20%</b>	<b>4.16%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	77.29	29.29	0.107	0.0	106.687
		Gravel	0.0	0.0	3.322	0.0	3.322
		Earth	3.397	0.0	0.0	0.0	3.397
		<b>Subtotal</b>	<b>80.687</b>	<b>29.29</b>	<b>3.429</b>		<b>113.406</b>
		<b>Condition (%)</b>	<b>71.15%</b>	<b>25.83%</b>	<b>3.02%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C</b>	Paved	84.467	54.22	7.829	0.0	146.516
		Gravel	20.53	146.813	12.269	0.0	179.612
		Earth	0.369	34.468	5.439	0.0	40.276
		<b>Subtotal</b>	<b>105.366</b>	<b>235.501</b>	<b>25.537</b>		<b>366.404</b>
		<b>Condition (%)</b>	<b>28.76%</b>	<b>64.27%</b>	<b>6.97%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	0.0	0.0	2.888	0.0	2.888
		Gravel	14.331	32.427	4.484	0.0	51.242
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>14.331</b>	<b>32.427</b>	<b>7.372</b>		<b>54.13</b>
		<b>Condition (%)</b>	<b>26.48%</b>	<b>59.91%</b>	<b>13.62%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	<b>Paved</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	19.076	41.375	55.213	0.0	115.664
		Earth	0.0	8.373	0.0	0.0	8.373
		<b>Subtotal</b>	<b>19.076</b>	<b>49.748</b>	<b>55.213</b>		<b>124.037</b>
		<b>Condition (%)</b>	<b>15.38%</b>	<b>40.11%</b>	<b>44.51%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	6.961	7.572	0.0	0.0	14.533
		Gravel	21.206	154.677	39.919	7.777	223.579
		Earth	1.572	8.563	7.813	4.413	22.361
		<b>Subtotal</b>	<b>29.739</b>	<b>170.812</b>	<b>47.732</b>	<b>12.19</b>	<b>260.473</b>
		<b>Condition (%)</b>	<b>11.42%</b>	<b>65.58%</b>	<b>18.33%</b>	<b>4.68%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.575	4.087	0.0	0.0	4.662
		Gravel	15.299	62.438	40.175	0.0	117.912
		Earth	1.941	6.316	11.595	0.0	19.852
		<b>Subtotal</b>	<b>17.815</b>	<b>72.841</b>	<b>51.77</b>		<b>142.426</b>
		<b>Condition (%)</b>	<b>12.51%</b>	<b>51.14%</b>	<b>36.35%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	1.636	5.854	3.373	0.413	11.276
		Gravel	113.68	428.89	259.207	1.251	803.028
		Earth	55.41	283.809	268.475	8.031	615.725
		<b>Subtotal</b>	<b>170.726</b>	<b>718.553</b>	<b>531.055</b>	<b>9.695</b>	<b>1430.029</b>
		<b>Condition (%)</b>	<b>11.94%</b>	<b>50.25%</b>	<b>37.14%</b>	<b>0.68%</b>	<b>100.00%</b>
		<b>Nandi Total</b>	<b>438.069</b>	<b>1309.442</b>	<b>722.134</b>	<b>21.885</b>	<b>2491.53</b>

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		<b>Nandi Overall Cond</b>	<b>17.58%</b>	<b>52.56%</b>	<b>28.98%</b>	<b>0.88%</b>	<b>100.00%</b>
<b>UasinGishu</b>	<b>A</b>	Paved	96.756	17.971	0.127	0.0	114.854
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>96.756</b>	<b>17.971</b>	<b>0.127</b>		<b>114.854</b>
		<b>Condition (%)</b>	<b>84.24%</b>	<b>15.65%</b>	<b>0.11%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	51.377	28.242	0.33	0.0	79.949
		Gravel	1.73	6.546	1.384	0.0	9.66
		Earth	0.101	0.0	0.0	0.0	0.101
		<b>Subtotal</b>	<b>53.208</b>	<b>34.788</b>	<b>1.714</b>		<b>89.71</b>
		<b>Condition (%)</b>	<b>59.31%</b>	<b>38.78%</b>	<b>1.91%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B_urb</b>	Paved	2.516	10.645	3.135	0.0	16.296
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	15.44%	65.32%	19.24%	0.00%	100.00%
		<b>Subtotal</b>	<b>2.516</b>	<b>10.645</b>	<b>3.135</b>		<b>16.296</b>
		<b>Condition (%)</b>	<b>15.44%</b>	<b>65.32%</b>	<b>19.24%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C</b>	Paved	37.663	82.648	0.759	0.051	121.121
		Gravel	71.419	182.774	43.114	13.311	310.618
		Earth	5.288	27.835	2.032	0.0	35.155
		<b>Subtotal</b>	<b>114.37</b>	<b>293.257</b>	<b>45.905</b>	<b>13.362</b>	<b>466.894</b>
		<b>Condition (%)</b>	<b>24.50%</b>	<b>62.81%</b>	<b>9.83%</b>	<b>2.86%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	1.992	8.344	0.866	1.088	12.29
		Gravel	3.749	12.194	13.883	1.69	31.516
		Earth	5.52	3.643	6.46	0.0	15.623
		<b>Subtotal</b>	<b>11.261</b>	<b>24.181</b>	<b>21.209</b>	<b>2.778</b>	<b>59.429</b>
		<b>Condition (%)</b>	<b>18.95%</b>	<b>40.69%</b>	<b>35.69%</b>	<b>4.67%</b>	<b>100.00%</b>
	<b>D</b>	Paved	0.303	8.507	1.276	0.0	10.086
		Gravel	23.231	84.746	13.027	0.0	121.004
		Earth	7.004	0.2	21.598	0.0	28.802
		<b>Subtotal</b>	<b>30.538</b>	<b>93.453</b>	<b>35.901</b>		<b>159.892</b>
		<b>Condition (%)</b>	<b>19.10%</b>	<b>58.45%</b>	<b>22.45%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	4.285	36.276	4.868	3.303	48.732
		Gravel	79.242	143.917	32.175	5.781	261.115
		Earth	8.443	50.432	22.497	0.087	81.459
		<b>Subtotal</b>	<b>91.97</b>	<b>230.625</b>	<b>59.54</b>	<b>9.171</b>	<b>391.306</b>
		<b>Condition (%)</b>	<b>23.50%</b>	<b>58.94%</b>	<b>15.22%</b>	<b>2.34%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.376	4.998	5.046	0.0	10.42
		Gravel	58.899	85.049	10.338	0.0	154.286
		Earth	27.777	8.273	0.729	0.0	36.779
		<b>Subtotal</b>	<b>87.052</b>	<b>98.32</b>	<b>16.113</b>		<b>201.485</b>
		<b>Condition (%)</b>	<b>43.21%</b>	<b>48.80%</b>	<b>8.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	6.586	31.544	8.061	1.751	47.942
		Gravel	440.117	605.087	149.52	4.508	1199.232
		Earth	212.442	862.664	337.422	8.308	1420.836
		<b>Subtotal</b>	<b>659.145</b>	<b>1499.295</b>	<b>495.003</b>	<b>14.567</b>	<b>2668.01</b>
		<b>Condition (%)</b>	<b>24.71%</b>	<b>56.20%</b>	<b>18.55%</b>	<b>0.55%</b>	<b>100.00%</b>
		<b>UasinGishu Total</b>	<b>1146.816</b>	<b>2302.535</b>	<b>678.647</b>	<b>39.878</b>	<b>4167.876</b>
		<b>UasinGishu Overall</b>	<b>27.52%</b>	<b>55.24%</b>	<b>16.28%</b>	<b>0.96%</b>	<b>100.00%</b>
<b>Transzoia</b>	<b>A</b>	Paved	11.072	46.245	0.057	0.0	57.374
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>11.072</b>	<b>46.245</b>	<b>0.057</b>		<b>57.374</b>
		<b>Condition (%)</b>	<b>19.30%</b>	<b>80.60%</b>	<b>0.10%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	18.988	50.565	0.532	0.0	70.085
		Gravel	9.468	34.552	14.182	0.0	58.202
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>28.456</b>	<b>85.117</b>	<b>14.714</b>		<b>128.287</b>
		<b>Condition (%)</b>	<b>22.18%</b>	<b>66.35%</b>	<b>11.47%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C</b>	Paved	7.239	15.093	1.938	0.0	24.27
		Gravel	41.889	87.11	47.275	0.0	176.274

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		Earth	13.023	3.088	0.0	0.0	16.111
		<b>Subtotal</b>	<b>62.151</b>	<b>105.291</b>	<b>49.213</b>		<b>216.655</b>
		<b>Condition (%)</b>	<b>28.69%</b>	<b>48.60%</b>	<b>22.71%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	1.243	3.504	0.61	0.0	5.357
		Gravel	0.0	17.062	0.0	0.0	17.062
		Earth	0.345	0.0	0.0	0.0	0.345
		<b>Subtotal</b>	<b>1.588</b>	<b>20.566</b>	<b>0.61</b>		<b>22.764</b>
		<b>Condition (%)</b>	<b>6.98%</b>	<b>90.34%</b>	<b>2.68%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	Paved	1.658	1.115	0.0	0.0	2.773
		Gravel	38.344	82.413	41.777	0.0	162.534
		Earth	7.555	4.147	18.103	0.0	29.805
		<b>Subtotal</b>	<b>47.557</b>	<b>87.675</b>	<b>59.88</b>		<b>195.112</b>
		<b>Condition (%)</b>	<b>24.37%</b>	<b>44.94%</b>	<b>30.69%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	1.052	15.529	1.208	0.0	17.789
		Gravel	89.522	152.168	2.405	0.0	244.095
		Earth	14.389	42.405	5.607	0.0	62.401
			23.06%	67.96%	8.99%	0.00%	100.00%
		<b>Subtotal</b>	<b>104.963</b>	<b>210.102</b>	<b>9.22</b>		<b>324.285</b>
		<b>Condition (%)</b>	<b>32.37%</b>	<b>64.79%</b>	<b>2.84%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.991	4.68	0.0	0.0	5.671
		Gravel	43.487	56.719	12.135	5.778	118.119
		Earth	4.641	10.759	0.0	0.0	15.4
		<b>Subtotal</b>	<b>49.119</b>	<b>72.158</b>	<b>12.135</b>	<b>5.778</b>	<b>139.19</b>
		<b>Condition (%)</b>	<b>35.29%</b>	<b>51.84%</b>	<b>8.72%</b>	<b>4.15%</b>	<b>100.00%</b>
	<b>G</b>	Paved	3.35	7.782	0.673	0.0	11.805
		Gravel	66.989	159.85	51.119	0.0	277.958
		Earth	121.677	246.018	53.838	13.529	435.062
		<b>Subtotal</b>	<b>192.016</b>	<b>413.65</b>	<b>105.63</b>	<b>13.529</b>	<b>724.825</b>
		<b>Condition (%)</b>	<b>26.49%</b>	<b>57.07%</b>	<b>14.57%</b>	<b>1.87%</b>	<b>100.00%</b>
		<b>Transzoia Total</b>	<b>496.922</b>	<b>1040.804</b>	<b>251.459</b>	<b>19.307</b>	<b>1808.492</b>
		<b>Transzoia Overall C</b>	<b>27.48%</b>	<b>57.55%</b>	<b>13.90%</b>	<b>1.07%</b>	<b>100.00%</b>
<b>ElegeyoMarakw</b>	<b>B</b>	Paved	83.976	16.388	3.672	5.104	109.14
		Gravel	23.805	42.228	105.031	0.0	171.064
		Earth	0.093	0.0	4.351	0.0	4.444
		<b>Subtotal</b>	<b>107.874</b>	<b>58.616</b>	<b>113.054</b>	<b>5.104</b>	<b>284.648</b>
		<b>Condition (%)</b>	<b>37.90%</b>	<b>20.59%</b>	<b>39.72%</b>	<b>1.79%</b>	<b>100.00%</b>
	<b>C</b>	Paved	37.576	6.153	0.0	0.0	43.729
		Gravel	60.993	230.259	39.492	0.0	330.744
		Earth	0.868	10.162	14.344	0.0	25.374
		<b>Subtotal</b>	<b>99.437</b>	<b>246.574</b>	<b>53.836</b>		<b>399.847</b>
		<b>Condition (%)</b>	<b>24.87%</b>	<b>61.67%</b>	<b>13.46%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	Paved	18.473	0.0	7.585	0.0	26.058
		Gravel	15.214	12.062	24.881	0.0	52.157
		Earth	0.0	0.395	0.607	0.0	1.002
		<b>Subtotal</b>	<b>33.687</b>	<b>12.457</b>	<b>33.073</b>		<b>79.217</b>
		<b>Condition (%)</b>	<b>42.52%</b>	<b>15.73%</b>	<b>41.75%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	43.852	74.612	49.326	0.0	167.79
		Earth	0.48	15.576	18.85	0.0	34.906
		<b>Subtotal</b>	<b>44.332</b>	<b>90.188</b>	<b>68.176</b>		<b>202.696</b>
		<b>Condition (%)</b>	<b>21.87%</b>	<b>44.49%</b>	<b>33.63%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	8.245	44.884	12.827	7.004	72.96
		Earth	9.383	0.692	3.194	0.0	13.269
		<b>Subtotal</b>	<b>17.628</b>	<b>45.576</b>	<b>16.021</b>	<b>7.004</b>	<b>86.229</b>
		<b>Condition (%)</b>	<b>20.44%</b>	<b>52.85%</b>	<b>18.58%</b>	<b>8.12%</b>	<b>100.00%</b>
	<b>G</b>	Paved	21.844	0.946	0.0	0.0	22.79
		Gravel	64.8	217.288	107.635	7.681	397.404
		Earth	73.262	148.54	182.384	0.0	404.186
			<b>159.906</b>	<b>366.774</b>	<b>290.019</b>	<b>7.681</b>	<b>824.38</b>

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		Condition (%)	19.40%	44.49%	35.18%	0.93%	100.00%
		ElegeyoMarakwet	462.864	820.185	574.179	19.789	1877.017
		ElegeyoMarakwet	24.66%	43.70%	30.59%	1.05%	100.00%
WestPokot	A	Paved	2.404	55.832	15.648	29.908	103.792
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0
		Subtotal	2.404	55.832	15.648	29.908	103.792
		Condition (%)	2.32%	53.79%	15.08%	28.82%	100.00%
	B	Paved	33.859	1.22	2.003	0.719	37.801
		Gravel	40.548	115.288	53.441	0.0	209.277
		Earth	0.0	0.0	3.317	0.0	3.317
		Subtotal	74.407	116.508	58.761	0.719	250.395
		Condition (%)	29.72%	46.53%	23.47%	0.29%	100.00%
	C	Paved	25.083	7.843	0.366	0.0	33.292
		Gravel	39.528	106.702	54.135	0.0	200.365
		Earth	0.0	20.743	20.381	0.0	41.124
		Subtotal	64.611	135.288	74.882		274.781
		Condition (%)	23.51%	49.23%	27.25%	0.00%	100.00%
	C_urb	Paved	0.0	2.185	1.884	0.0	4.069
		Gravel	15.484	3.234	0.0	2.518	21.236
		Earth	0.0	0.34	0.0	0.0	0.34
		Subtotal	15.484	5.759	1.884	2.518	25.645
		Condition (%)	60.38%	22.46%	7.35%	9.82%	100.00%
	D	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	0.697	76.654	21.819	0.0	99.17
		Earth	0.0	0.25	45.483	0.0	45.733
		Subtotal	0.697	76.904	67.302		144.903
		Condition (%)	0.48%	53.07%	46.45%	0.00%	100.00%
	E	Paved	0.386	0.201	0.0	0.0	0.587
		Gravel	16.755	119.763	0.0	13.541	150.059
		Earth	0.674	11.572	4.718	0.0	16.964
		Subtotal	17.815	131.536	4.718	13.541	167.61
		Condition (%)	10.63%	78.48%	2.81%	8.08%	100.00%
	F	Paved	0.0	1.46	0.0	0.0	1.46
		Gravel	1.873	72.404	11.007	0.0	85.284
		Earth	3.192	12.887	3.937	0.0	20.016
		Subtotal	5.065	86.751	14.944		106.76
		Condition (%)	4.74%	81.26%	14.00%	0.00%	100.00%
	G	Paved	0.325	0.102	0.349	0.0	0.776
		Gravel	55.608	201.419	183.406	0.0	440.433
		Earth	49.886	146.471	257.743	0.0	454.1
		Subtotal	105.819	347.992	441.498		895.309
		Condition (%)	11.82%	38.87%	49.31%	0.00%	100.00%
		WestPokot Total	286.302	956.57	679.637	46.686	1969.195
		WestPokot Overall	14.54%	48.58%	34.51%	2.37%	100.00%
Baringo	A	Paved	9.74	17.085	0.0	0.0	26.825
		Gravel	0.0	0.0	0.014	0.0	0.014
		Earth	0.0	0.0	90.183	0.0	90.183
		Subtotal	9.74	17.085	90.197		117.022
		Condition (%)	8.32%	14.60%	77.08%	0.00%	100.00%
	B	Paved	90.871	148.076	0.243	0.0	239.19
		Gravel	0.0	0.0	0.0	0.0	0.0
		Earth	44.852	3.019	56.66	0.0	104.531
		Subtotal	135.723	151.095	56.903		343.721
		Condition (%)	39.49%	43.96%	16.55%	0.00%	100.00%
	C	Paved	49.945	75.819	8.333	0.0	134.097
		Gravel	0.0	83.437	38.645	24.891	146.973
		Earth	0.0	123.595	203.76	0.0	327.355
		Subtotal	49.945	282.851	250.738	24.891	608.425
		Condition (%)	8.21%	46.49%	41.21%	4.09%	100.00%



COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
	<b>C_urb</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	7.59	5.736	0.0	13.326
		Earth	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>		<b>7.59</b>	<b>5.736</b>		<b>13.326</b>
		<b>Condition (%)</b>	<b>0.00%</b>	<b>56.96%</b>	<b>43.04%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	Paved	0.682	0.765	0.0	0.0	1.447
		Gravel	0.0	63.032	58.159	0.0	121.191
		Earth	19.719	5.639	90.488	4.015	119.861
		<b>Subtotal</b>	<b>20.401</b>	<b>69.436</b>	<b>148.647</b>	<b>4.015</b>	<b>242.499</b>
		<b>Condition (%)</b>	<b>8.41%</b>	<b>28.63%</b>	<b>61.30%</b>	<b>1.66%</b>	<b>100.00%</b>
	<b>E</b>	Paved	22.848	10.116	8.985	0.0	41.949
		Gravel	1.488	59.143	85.191	18.51	164.332
		Earth	9.298	41.32	71.338	0.0	121.956
		<b>Subtotal</b>	<b>33.634</b>	<b>110.579</b>	<b>165.514</b>	<b>18.51</b>	<b>328.237</b>
		<b>Condition (%)</b>	<b>10.25%</b>	<b>33.69%</b>	<b>50.43%</b>	<b>5.64%</b>	<b>100.00%</b>
	<b>F</b>	Paved	5.302	2.39	9.157	0.0	16.849
		Gravel	2.43	47.255	22.903	0.0	72.588
		Earth	0.904	64.232	49.676	0.0	114.812
		<b>Subtotal</b>	<b>8.636</b>	<b>113.877</b>	<b>81.736</b>		<b>204.249</b>
		<b>Condition (%)</b>	<b>4.23%</b>	<b>55.75%</b>	<b>40.02%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	8.683	7.408	10.218	0.0	26.309
		Gravel	26.888	109.002	111.128	17.318	264.336
		Earth	87.034	129.246	680.29	10.264	906.834
		<b>Subtotal</b>	<b>122.605</b>	<b>245.656</b>	<b>801.636</b>	<b>27.582</b>	<b>1197.479</b>
		<b>Condition (%)</b>	<b>10.24%</b>	<b>20.51%</b>	<b>66.94%</b>	<b>2.30%</b>	<b>100.00%</b>
		<b>Baringo Total</b>	<b>380.684</b>	<b>998.169</b>	<b>1601.107</b>	<b>74.998</b>	<b>3054.958</b>
		<b>Baringo Overall Co</b>	<b>12.46%</b>	<b>32.67%</b>	<b>52.41%</b>	<b>2.45%</b>	<b>100.00%</b>
<b>Marsabit</b>	<b>A</b>	Paved	132.448	233.585	0.789	0.0	366.822
		Gravel	0.0	10.964	215.739	0.0	226.703
		Earth	0.0	186.76	46.274	0.0	233.034
		<b>Subtotal</b>	<b>132.448</b>	<b>431.309</b>	<b>262.802</b>		<b>826.559</b>
		<b>Condition (%)</b>	<b>16.02%</b>	<b>52.18%</b>	<b>31.79%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	306.616	269.466	0.0	576.082
		Earth	0.0	83.321	107.501	0.0	190.822
		<b>Subtotal</b>		<b>389.937</b>	<b>376.967</b>		<b>766.904</b>
		<b>Condition (%)</b>	<b>0.00%</b>	<b>50.85%</b>	<b>49.15%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	171.85	0.0	0.0	171.85
		Earth	0.0	51.129	97.271	0.0	148.4
		<b>Subtotal</b>		<b>222.979</b>	<b>97.271</b>		<b>320.25</b>
		<b>Condition (%)</b>	<b>0.00%</b>	<b>69.63%</b>	<b>30.37%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	1.344	7.378	0.36	0.0	9.082
		Earth	0.097	9.473	2.779	0.0	12.349
		<b>Subtotal</b>	<b>1.441</b>	<b>16.851</b>	<b>3.139</b>		<b>21.431</b>
		<b>Condition (%)</b>	<b>6.72%</b>	<b>78.63%</b>	<b>14.65%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	Paved	1.288	5.42	0.0	0.0	6.708
		Gravel	0.0	57.17	130.997	0.0	188.167
		Earth	0.0	60.202	15.069	0.0	75.271
		<b>Subtotal</b>	<b>1.288</b>	<b>122.792</b>	<b>146.066</b>		<b>270.146</b>
		<b>Condition (%)</b>	<b>0.48%</b>	<b>45.45%</b>	<b>54.07%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	229.711	91.114	0.0	320.825
		Earth	0.0	0.942	77.85	0.0	78.792
		<b>Subtotal</b>		<b>230.653</b>	<b>168.964</b>		<b>399.617</b>
		<b>Condition (%)</b>	<b>0.00%</b>	<b>57.72%</b>	<b>42.28%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	66.619	159.331	0.0	225.95
		Earth	0.0	21.098	85.425	0.0	106.523



COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		<b>Subtotal</b>		<b>87.717</b>	<b>244.756</b>		<b>332.473</b>
		<b>Condition (%)</b>	<b>0.00%</b>	<b>26.38%</b>	<b>73.62%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	0.686	0.34	0.0	0.0	1.026
		Gravel	53.218	587.664	590.169	0.294	1231.345
		Earth	6.989	367.195	255.132	0.0	629.316
		<b>Subtotal</b>	<b>60.893</b>	<b>955.199</b>	<b>845.301</b>	<b>0.294</b>	<b>1861.687</b>
		<b>Condition (%)</b>	<b>3.27%</b>	<b>51.31%</b>	<b>45.41%</b>	<b>0.02%</b>	<b>100.00%</b>
		<b>Marsabit Total</b>	<b>196.07</b>	<b>2457.437</b>	<b>2145.266</b>	<b>0.294</b>	<b>4799.067</b>
		<b>Marsabit Overall C</b>	<b>4.09%</b>	<b>51.21%</b>	<b>44.70%</b>	<b>0.01%</b>	<b>100.00%</b>
<b>Samburu</b>	<b>A</b>	Paved	102.878	0.431	0.644	0.0	103.953
		Gravel	0.0	170.032	0.0	0.0	170.032
		Earth	0.0	0.577	0.0	0.0	0.577
		<b>Subtotal</b>	<b>102.878</b>	<b>171.04</b>	<b>0.644</b>		<b>274.562</b>
		<b>Condition (%)</b>	<b>37.47%</b>	<b>62.30%</b>	<b>0.23%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>B</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	0.0	52.352	0.0	52.352
		Earth	0.00%	0.00%	100.00%	0.00%	100.00%
		<b>Subtotal</b>			<b>52.352</b>		<b>52.352</b>
		<b>Condition (%)</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C</b>	Paved	0.0	0.688	0.502	0.0	1.19
		Gravel	26.698	246.519	83.877	0.0	357.094
		Earth	0.0	80.584	158.86	0.0	239.444
		<b>Subtotal</b>	<b>26.698</b>	<b>327.791</b>	<b>243.239</b>		<b>597.728</b>
		<b>Condition (%)</b>	<b>4.47%</b>	<b>54.84%</b>	<b>40.69%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>C_urb</b>	Paved	0.0	0.0	0.624	0.0	0.624
		Gravel	0.0	3.106	0.0	0.0	3.106
		Earth	0.0	2.79	3.878	0.0	6.668
		<b>Subtotal</b>		<b>5.896</b>	<b>4.502</b>		<b>10.398</b>
		<b>Condition (%)</b>	<b>0.00%</b>	<b>56.70%</b>	<b>43.30%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>D</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	0.61	45.617	29.267	0.0	75.494
		Earth	0.0	32.451	39.065	47.131	118.647
		<b>Subtotal</b>	<b>0.61</b>	<b>78.068</b>	<b>68.332</b>	<b>47.131</b>	<b>194.141</b>
		<b>Condition (%)</b>	<b>0.31%</b>	<b>40.21%</b>	<b>35.20%</b>	<b>24.28%</b>	<b>100.00%</b>
	<b>E</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	13.322	42	0.0	0.0	55.322
		Earth	2.239	30.42	1.896	0.0	34.555
		<b>Subtotal</b>	<b>15.561</b>	<b>72.42</b>	<b>1.896</b>		<b>89.877</b>
		<b>Condition (%)</b>	<b>17.31%</b>	<b>80.58%</b>	<b>2.11%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	74.263	92.495	0.0	166.758
		Earth	0.788	28.275	31.692	4.932	65.687
		<b>Subtotal</b>	<b>0.788</b>	<b>102.538</b>	<b>124.187</b>	<b>4.932</b>	<b>232.445</b>
		<b>Condition (%)</b>	<b>0.34%</b>	<b>44.11%</b>	<b>53.43%</b>	<b>2.12%</b>	<b>100.00%</b>
	<b>G</b>	Paved	0.0	0.0	0.0	0.0	0.0
		Gravel	1.724	137.561	77.431	1.961	218.677
		Earth	23.272	246.859	480.423	10.102	760.656
		<b>Subtotal</b>	<b>24.996</b>	<b>384.42</b>	<b>557.854</b>	<b>12.063</b>	<b>979.333</b>
		<b>Condition (%)</b>	<b>2.55%</b>	<b>39.25%</b>	<b>56.96%</b>	<b>1.23%</b>	<b>100.00%</b>
		<b>Samburu Total</b>	<b>171.531</b>	<b>1142.173</b>	<b>1053.006</b>	<b>64.126</b>	<b>2430.836</b>
		<b>Samburu Overall C</b>	<b>7.06%</b>	<b>46.99%</b>	<b>43.32%</b>	<b>2.64%</b>	<b>100.00%</b>
<b>Turkana</b>	<b>A</b>	Paved	154.662	130.347	99.56	4.245	388.814
		Gravel	0.0	0.0	0.0	5.985	5.985
		Earth	0.0	12.68	179.581	0.0	192.261
		<b>Subtotal</b>	<b>154.662</b>	<b>143.027</b>	<b>279.141</b>	<b>10.23</b>	<b>587.06</b>
		<b>Condition (%)</b>	<b>26.35%</b>	<b>24.36%</b>	<b>47.55%</b>	<b>1.74%</b>	<b>100.00%</b>
	<b>B</b>	Paved	1.131	3.312	0.0	54.527	58.97
		Gravel	0.372	127.431	188.955	2.217	318.975
		Earth	2.753	70.082	326.759	0.0	399.594
		<b>Subtotal</b>	<b>4.256</b>	<b>200.825</b>	<b>515.714</b>	<b>56.744</b>	<b>777.539</b>

COUNTY	ROAD CLASS	Surface Type	LENGTH (Km) & CONDITION				Total Length (km) & Condition
			Good	Fair	Poor	Under Constructio	
		<b>Condition (%)</b>	<b>0.55%</b>	<b>25.83%</b>	<b>66.33%</b>	<b>7.30%</b>	<b>100.00%</b>
	<b>C</b>	Paved	0.0	0.0	0.0	0.638	0.638
		Gravel	0.0	140.191	101.509	0.0	241.7
		Earth	0.0	83.991	442.046	0.0	526.037
		<b>Subtotal</b>		<b>224.182</b>	<b>543.555</b>	<b>0.638</b>	<b>768.375</b>
		<b>Condition (%)</b>	<b>0.00%</b>	<b>29.18%</b>	<b>70.74%</b>	<b>0.08%</b>	<b>100.00%</b>
	<b>D</b>	Paved	2.106	14.023	4.023	0.0	20.152
		Gravel	38.356	125.41	11.077	27.725	202.568
		Earth	39.333	18.93	149.898	0.0	208.161
		<b>Subtotal</b>	<b>79.795</b>	<b>158.363</b>	<b>164.998</b>	<b>27.725</b>	<b>430.881</b>
		<b>Condition (%)</b>	<b>18.52%</b>	<b>36.75%</b>	<b>38.29%</b>	<b>6.43%</b>	<b>100.00%</b>
	<b>E</b>	Paved	0.893	0.0	0.0	0.0	0.893
		Gravel	0.0	73.732	29.884	0.0	103.616
		Earth	23.322	38.138	183.084	0.0	244.544
		<b>Subtotal</b>	<b>24.215</b>	<b>111.87</b>	<b>212.968</b>		<b>349.053</b>
		<b>Condition (%)</b>	<b>6.94%</b>	<b>32.05%</b>	<b>61.01%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>F</b>	Paved	1.759	0.0	0.0	0.0	1.759
		Gravel	0.256	19.171	0.0	0.0	19.427
		Earth	9.378	65.855	85.105	0.0	160.338
		<b>Subtotal</b>	<b>11.393</b>	<b>85.026</b>	<b>85.105</b>		<b>181.524</b>
		<b>Condition (%)</b>	<b>6.28%</b>	<b>46.84%</b>	<b>46.88%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	3.777	1.883	6.127	0.0	11.787
		Gravel	12.162	238.691	99.852	0.0	350.705
		Earth	64.889	641.019	912.604	0.0	1618.512
		<b>Subtotal</b>	<b>80.828</b>	<b>881.593</b>	<b>1018.583</b>		<b>1981.004</b>
		<b>Condition (%)</b>	<b>4.08%</b>	<b>44.50%</b>	<b>51.42%</b>	<b>0.00%</b>	<b>100.00%</b>
		<b>Turkana Total</b>	<b>355.149</b>	<b>1804.886</b>	<b>2820.064</b>	<b>95.337</b>	<b>5075.436</b>
		<b>Turkana Overall Co</b>	<b>7.00%</b>	<b>35.56%</b>	<b>55.56%</b>	<b>1.88%</b>	<b>100.00%</b>
<b>Total Total</b>			<b>10114.378</b>	<b>24174.84</b>	<b>18077.729</b>	<b>764.179</b>	<b>53131.126</b>
<b>Total Overall Condition%</b>			<b>19.04%</b>	<b>45.50%</b>	<b>34.02%</b>	<b>1.44%</b>	<b>100.00%</b>

**TABLE 2C: SUMMARY OF SURFACE TYPE AND ROAD  
CONDITION PER ROAD CLASS (NARROW  
ROADS)**

**TABLE 2C: SUMMARY OF SURFACE TYPE AND ROAD CONDITION PER ROAD CLASS (NARROW ROADS) OVERALL**

ROAD CLASS	SURFACE TYPE	ROAD LENGTH (Km) & CONDITION (%)								TOTAL
		Good		Fair		Poor		Under Construction		
		<6	>6	<6	>6	<6	>6	<6	>6	
D	Paved	0.0	34.357	0.0	30.362	0.0	6.177	0.0	0.287	71.183
	Earth	0.0	0.117	0.0	0.567	0.0	3.543	0.0	0.0	4.227
	Gravel	0.0	0.998	0.0	0.539	0.0	0.0	0.0	0.0	1.537
	<b>Subtotal</b>	<b>0.0</b>	<b>35.472</b>	<b>0.0</b>	<b>31.468</b>	<b>0.0</b>	<b>9.72</b>	<b>0.0</b>	<b>0.287</b>	<b>76.947</b>
	Condition(%)	<b>0.00%</b>	<b>46.10%</b>	<b>0.00%</b>	<b>40.90%</b>	<b>0.00%</b>	<b>12.63%</b>	<b>0.00%</b>	<b>0.37%</b>	<b>100.00%</b>
E	Paved	0.0	0.318	0.0	1.226	0.0	0.0	0.0	0.0	1.544
	Earth	0.0	6.138	0.0	5.146	0.694	13.534	0.0	0.0	25.512
	Gravel	0.0	1480.087	1.903	2438.904	0.0	630.518	0.0	115.299	4666.711
	<b>Subtotal</b>	<b>0.0</b>	<b>1486.543</b>	<b>1.903</b>	<b>2445.276</b>	<b>0.694</b>	<b>644.052</b>	<b>0.0</b>	<b>115.299</b>	<b>4693.767</b>
	Condition(%)	<b>0.00%</b>	<b>31.67%</b>	<b>0.04%</b>	<b>52.10%</b>	<b>0.01%</b>	<b>13.72%</b>	<b>0.00%</b>	<b>2.46%</b>	<b>100.00%</b>
F	Paved	0.0	0.537	0.0	0.006	0.0	0.0	0.0	0.0	0.543
	Earth	0.0	2.066	0.0	0.0	0.0	0.0	0.0	0.0	2.066
	Gravel	0.0	0.226	0.0	0.111	0.0	0.0	0.0	0.0	0.337
	<b>Subtotal</b>	<b>0.0</b>	<b>2.829</b>	<b>0.0</b>	<b>0.117</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>2.946</b>
	Condition(%)	<b>0.00%</b>	<b>96.03%</b>	<b>0.00%</b>	<b>3.97%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
G	Paved	0.0	5.877	0.0	0.0	0.0	0.0	0.0	0.0	5.877
	Earth	0.0	515.396	0.797	2029.439	0.471	2553.271	0.0	172.748	5272.122
	Gravel	0.0	16.929	0.0	38.905	0.0	10.667	0.0	0.11	66.611
	<b>Subtotal</b>	<b>0.0</b>	<b>538.202</b>	<b>0.797</b>	<b>2068.344</b>	<b>0.471</b>	<b>2563.938</b>	<b>0.0</b>	<b>172.858</b>	<b>5344.61</b>
	Condition(%)	<b>0.00%</b>	<b>10.07%</b>	<b>0.01%</b>	<b>38.70%</b>	<b>0.01%</b>	<b>47.97%</b>	<b>0.00%</b>	<b>3.23%</b>	<b>100.00%</b>
NR	Paved	0.0	5.039	0.715	10.733	0.0	3.449	0.0	0.0	19.936
	Earth	98.549	539.1	559.218	2569.195	2410.802	4916.208	5.687	46.225	11144.984
	Gravel	60.036	997.571	129.626	2242.848	235.347	1078.576	0.0	23.113	4767.117
	<b>Subtotal</b>	<b>158.585</b>	<b>1541.71</b>	<b>689.559</b>	<b>4822.776</b>	<b>2646.149</b>	<b>5998.233</b>	<b>5.687</b>	<b>69.338</b>	<b>15932.037</b>
	Condition(%)	<b>1.00%</b>	<b>9.68%</b>	<b>4.33%</b>	<b>30.27%</b>	<b>16.61%</b>	<b>37.65%</b>	<b>0.04%</b>	<b>0.44%</b>	<b>100.00%</b>
Overall	Paved	0.0	46.128	46.128	42.327	43.042	9.626	9.626	0.287	0.287
	Earth	60.036	2495.811	2555.847	4721.307	4852.836	1719.761	1955.108	138.522	138.522
	Gravel	98.549	1062.817	1161.366	4604.347	5164.362	7486.556	9898.523	218.973	224.66
	<b>Subtotal</b>	<b>158.585</b>	<b>3604.756</b>	<b>692.259</b>	<b>9367.981</b>	<b>2647.314</b>	<b>9215.943</b>	<b>5.687</b>	<b>357.782</b>	<b>26050.307</b>
	Condition(%)	<b>0.61%</b>	<b>13.84%</b>	<b>2.66%</b>	<b>35.96%</b>	<b>10.16%</b>	<b>35.38%</b>	<b>0.02%</b>	<b>1.37%</b>	<b>100.00%</b>

**TABLE 2D: SUMMARY OF SURFACE TYPE AND ROAD  
CONDITION PER ROAD CLASS (NARROW  
ROADS) PER COUNTY**



COUNTY	ROAD CLASS	SURFACE TYPE	Road Length (km) & Condition (%)								Total Length (km)
			Good		Fair		Poor		Under Construction		
			<6	>6	<6	>6	<6	>6	<6	>6	
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>0.458</b>	<b>0.0</b>	<b>2.827</b>	<b>0.0</b>	<b>3.536</b>	<b>0.0</b>	<b>0.0</b>	<b>6.821</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>6.71%</b>	<b>0.00%</b>	<b>41.45%</b>	<b>0.00%</b>	<b>51.84%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
		Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E	Gravel	0.0	53.489	0.0	83.992	0.0	16.878	0.0	0.0	154.359
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>53.489</b>	<b>0.0</b>	<b>83.992</b>	<b>0.0</b>	<b>16.878</b>	<b>0.0</b>	<b>0.0</b>	<b>154.359</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>34.65%</b>	<b>0.00%</b>	<b>54.41%</b>	<b>0.00%</b>	<b>10.93%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	G	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	0.121	0.0	0.707	0.0	1.022	0.0	0.0	1.85
		Earth	0.0	8.122	0.0	39.013	0.243	89.459	0.0	2.859	139.696
		<b>Subtotal</b>	<b>0.0</b>	<b>8.243</b>	<b>0.0</b>	<b>39.72</b>	<b>0.243</b>	<b>90.481</b>	<b>0.0</b>	<b>2.859</b>	<b>141.546</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>5.82%</b>	<b>0.00%</b>	<b>28.06%</b>	<b>0.17%</b>	<b>63.92%</b>	<b>0.00%</b>	<b>2.02%</b>	<b>100.00%</b>
	NR	Paved	0.0	0.0	0.0	1.304	0.0	0.0	0.0	0.0	1.304
		Gravel	4.296	50.326	11.867	65.904	6.118	47.431	0.0	0.0	185.942
		Earth	5.094	10.136	22.927	69.008	95.683	209.853	1.6	6.342	420.643
		<b>Subtotal</b>	<b>9.39</b>	<b>60.462</b>	<b>34.794</b>	<b>136.216</b>	<b>101.801</b>	<b>257.284</b>	<b>1.6</b>	<b>6.342</b>	<b>607.889</b>
		<b>Condition(%)</b>	<b>1.54%</b>	<b>9.95%</b>	<b>5.72%</b>	<b>22.41%</b>	<b>16.75%</b>	<b>42.32%</b>	<b>0.26%</b>	<b>1.04%</b>	<b>100.00%</b>
		<b>Kisii Total</b>	<b>9.39</b>	<b>122.652</b>	<b>34.794</b>	<b>262.755</b>	<b>102.044</b>	<b>368.179</b>	<b>1.6</b>	<b>9.201</b>	<b>910.615</b>
		<b>Kisii Overall %</b>	<b>1.03%</b>	<b>13.47%</b>	<b>3.82%</b>	<b>28.85%</b>	<b>11.21%</b>	<b>40.43%</b>	<b>0.18%</b>	<b>1.01%</b>	<b>100.00%</b>
Migori	D	Paved	0.0	0.071	0.0	0.999	0.0	0.0	0.0	0.0	1.07
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>0.071</b>	<b>0.0</b>	<b>0.999</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>1.07</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>6.64%</b>	<b>0.00%</b>	<b>93.36%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	E	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	116.068	0.0	242.266	0.0	55.877	0.0	0.0	414.211
		Earth	0.0	5.599	0.0	4.571	0.0	2.434	0.0	0.0	12.604
		<b>Subtotal</b>	<b>0.0</b>	<b>121.667</b>	<b>0.0</b>	<b>246.837</b>	<b>0.0</b>	<b>58.311</b>	<b>0.0</b>	<b>0.0</b>	<b>426.815</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>28.51%</b>	<b>0.00%</b>	<b>57.83%</b>	<b>0.00%</b>	<b>13.66%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	F	Paved	0.0	0.277	0.0	0.006	0.0	0.0	0.0	0.0	0.283
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>0.277</b>	<b>0.0</b>	<b>0.006</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.283</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>97.88%</b>	<b>0.00%</b>	<b>2.12%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	G	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	0.0	0.0	0.489	0.0	0.274	0.0	0.0	0.763
		Earth	0.0	45.149	0.424	131.551	0.0	207.17	0.0	16.527	400.821
		<b>Subtotal</b>	<b>0.0</b>	<b>45.149</b>	<b>0.424</b>	<b>132.04</b>	<b>0.0</b>	<b>207.444</b>	<b>0.0</b>	<b>16.527</b>	<b>401.584</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>11.24%</b>	<b>0.11%</b>	<b>32.88%</b>	<b>0.00%</b>	<b>51.66%</b>	<b>0.00%</b>	<b>4.12%</b>	<b>100.00%</b>
	NR	Paved	0.0	0.379	0.0	0.559	0.0	0.457	0.0	0.0	1.395
		Gravel	1.548	32.572	4.019	157.707	4.436	67.728	0.0	0.0	268.01
		Earth	1.784	14.783	26.124	184.575	149.871	308.146	0.0	2.408	687.691
		<b>Subtotal</b>	<b>3.332</b>	<b>47.734</b>	<b>30.143</b>	<b>342.841</b>	<b>154.307</b>	<b>376.331</b>	<b>0.0</b>	<b>2.408</b>	<b>957.096</b>
		<b>Condition(%)</b>	<b>0.35%</b>	<b>4.99%</b>	<b>3.15%</b>	<b>35.82%</b>	<b>16.12%</b>	<b>39.32%</b>	<b>0.00%</b>	<b>0.25%</b>	<b>100.00%</b>
		<b>Migori Total</b>	<b>3.332</b>	<b>214.898</b>	<b>30.567</b>	<b>722.723</b>	<b>154.307</b>	<b>642.086</b>	<b>0.0</b>	<b>18.935</b>	<b>1786.848</b>
		<b>Migori Overall %</b>	<b>0.19%</b>	<b>12.03%</b>	<b>1.71%</b>	<b>40.45%</b>	<b>8.64%</b>	<b>35.93%</b>	<b>0.00%</b>	<b>1.06%</b>	<b>100.00%</b>
Homabay	D	Paved	0.0	0.0	0.0	0.473	0.0	0.0	0.0	0.0	0.473
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.473</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.473</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	E	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	49.794	0.0	165.839	0.0	27.11	0.0	8.848	251.591
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>49.794</b>	<b>0.0</b>	<b>165.839</b>	<b>0.0</b>	<b>27.11</b>	<b>0.0</b>	<b>8.848</b>	<b>251.591</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>19.79%</b>	<b>0.00%</b>	<b>65.92%</b>	<b>0.00%</b>	<b>10.78%</b>	<b>0.00%</b>	<b>3.52%</b>	<b>100.00%</b>
	G	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	23.345	0.0	56.897	0.0	265.158	0.0	4.172	349.572
		<b>Subtotal</b>	<b>0.0</b>	<b>23.345</b>	<b>0.0</b>	<b>56.897</b>	<b>0.0</b>	<b>265.158</b>	<b>0.0</b>	<b>4.172</b>	<b>349.572</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>6.68%</b>	<b>0.00%</b>	<b>16.28%</b>	<b>0.00%</b>	<b>75.85%</b>	<b>0.00%</b>	<b>1.19%</b>	<b>100.00%</b>
	NR	Paved	0.0	0.0	0.0	0.0	0.0	0.119	0.0	0.0	0.119
		Gravel	1.671	43.24	14.284	162.959	16.601	69.285	0.0	2.872	310.912
		Earth	0.678	20.57	32.218	128.266	217.369	367.335	0.0	2.588	769.024
		<b>Subtotal</b>	<b>2.349</b>	<b>63.81</b>	<b>46.502</b>	<b>291.225</b>	<b>233.97</b>	<b>436.739</b>	<b>0.0</b>	<b>5.46</b>	<b>1080.055</b>
		<b>Condition(%)</b>	<b>0.22%</b>	<b>5.91%</b>	<b>4.31%</b>	<b>26.96%</b>	<b>21.66%</b>	<b>40.44%</b>	<b>0.00%</b>	<b>0.51%</b>	<b>100.00%</b>
		<b>Homabay Total</b>	<b>2.349</b>	<b>136.949</b>	<b>46.502</b>	<b>514.434</b>	<b>233.97</b>	<b>729.007</b>	<b>0.0</b>	<b>18.48</b>	<b>1681.691</b>

COUNTY	ROAD CLASS	SURFACE TYPE	Road Length (km) & Condition (%)								Total Length (km)	
			Good		Fair		Poor		Under Construction			
			<6	>6	<6	>6	<6	>6	<6	>6		
		<b>Homabay Overall %</b>	<b>0.14%</b>	<b>8.14%</b>	<b>2.77%</b>	<b>30.59%</b>	<b>13.91%</b>	<b>43.35%</b>	<b>0.00%</b>	<b>1.10%</b>	<b>100.00%</b>	
<b>Kisumu</b>	<b>D</b>	Paved	0.0	0.433	0.0	0.273	0.0	0.392	0.0	0.0	1.098	
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		<b>Subtotal</b>	<b>0.0</b>	<b>0.433</b>	<b>0.0</b>	<b>0.273</b>	<b>0.0</b>	<b>0.392</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>1.098</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>39.44%</b>	<b>0.00%</b>	<b>24.86%</b>	<b>0.00%</b>	<b>35.70%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	108.076	0.0	128.858	0.0	23.533	0.0	5.9	266.367	
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		<b>Subtotal</b>	<b>0.0</b>	<b>108.076</b>	<b>0.0</b>	<b>128.858</b>	<b>0.0</b>	<b>23.533</b>	<b>0.0</b>	<b>5.9</b>	<b>266.367</b>	
		<b>Condition(%)</b>	<b>0.00%</b>	<b>40.57%</b>	<b>0.00%</b>	<b>48.38%</b>	<b>0.00%</b>	<b>8.83%</b>	<b>0.00%</b>	<b>2.21%</b>	<b>100.00%</b>	
	<b>G</b>	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	2.689	0.0	0.214	0.0	0.53	0.0	0.0	3.433	
		Earth	0.0	15.432	0.0	51.871	0.0	69.352	0.0	7.074	143.729	
		<b>Subtotal</b>	<b>0.0</b>	<b>18.121</b>	<b>0.0</b>	<b>52.085</b>	<b>0.0</b>	<b>69.882</b>	<b>0.0</b>	<b>7.074</b>	<b>147.162</b>	
		<b>Condition(%)</b>	<b>0.00%</b>	<b>12.31%</b>	<b>0.00%</b>	<b>35.39%</b>	<b>0.00%</b>	<b>47.49%</b>	<b>0.00%</b>	<b>4.81%</b>	<b>100.00%</b>	
	<b>NR</b>	Paved	0.0	0.846	0.0	0.879	0.0	0.545	0.0	0.0	2.27	
		Gravel	0.568	72.027	9.802	118	12.347	74.407	0.0	4.583	291.734	
		Earth	1.907	22.399	14.932	79.266	59.952	183.158	3.842	0.0	365.456	
		<b>Subtotal</b>	<b>2.475</b>	<b>95.272</b>	<b>24.734</b>	<b>198.145</b>	<b>72.299</b>	<b>258.11</b>	<b>3.842</b>	<b>4.583</b>	<b>659.46</b>	
		<b>Condition(%)</b>	<b>0.38%</b>	<b>14.45%</b>	<b>3.75%</b>	<b>30.05%</b>	<b>10.96%</b>	<b>39.14%</b>	<b>0.58%</b>	<b>0.69%</b>	<b>100.00%</b>	
		<b>Kisumu Total</b>	<b>2.475</b>	<b>221.902</b>	<b>24.734</b>	<b>379.361</b>	<b>72.299</b>	<b>351.917</b>	<b>3.842</b>	<b>17.557</b>	<b>1074.087</b>	
		<b>Kisumu Overall Condition</b>	<b>0.23%</b>	<b>20.66%</b>	<b>2.30%</b>	<b>35.32%</b>	<b>6.73%</b>	<b>32.76%</b>	<b>0.36%</b>	<b>1.63%</b>	<b>100.00%</b>	
<b>Siaya</b>	<b>D</b>	Paved	0.0	2.112	0.0	0.69	0.0	0.0	0.0	0.0	2.802	
		Gravel	0.0	0.0	0.0	0.505	0.0	0.0	0.0	0.0	0.505	
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		<b>Subtotal</b>	<b>0.0</b>	<b>2.112</b>	<b>0.0</b>	<b>1.195</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>3.307</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>63.86%</b>	<b>0.00%</b>	<b>36.14%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	198.132	0.0	161.165	0.0	16.585	0.0	9.043	384.925	
		Earth	0.0	0.0	0.0	0.113	0.0	0.0	0.0	0.0	0.113	
		<b>Subtotal</b>	<b>0.0</b>	<b>198.132</b>	<b>0.0</b>	<b>161.278</b>	<b>0.0</b>	<b>16.585</b>	<b>0.0</b>	<b>9.043</b>	<b>385.038</b>	
		<b>Condition(%)</b>	<b>0.00%</b>	<b>51.46%</b>	<b>0.00%</b>	<b>41.89%</b>	<b>0.00%</b>	<b>4.31%</b>	<b>0.00%</b>	<b>2.35%</b>	<b>100.00%</b>	
	<b>G</b>	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Earth	0.0	63.387	0.0	187.157	0.228	121.513	0.0	11.068	383.353	
		<b>Subtotal</b>	<b>0.0</b>	<b>63.387</b>	<b>0.0</b>	<b>187.157</b>	<b>0.228</b>	<b>121.513</b>	<b>0.0</b>	<b>11.068</b>	<b>383.353</b>	
		<b>Condition(%)</b>	<b>0.00%</b>	<b>16.53%</b>	<b>0.00%</b>	<b>48.82%</b>	<b>0.06%</b>	<b>31.70%</b>	<b>0.00%</b>	<b>2.89%</b>	<b>100.00%</b>	
<b>NR</b>	Paved	0.0	0.0	0.0	0.406	0.0	0.0	0.0	0.0	0.406		
	Gravel	0.0	171.311	3.984	272.492	6.873	61.625	0.0	1.414	517.699		
	Earth	1.417	81.043	50.099	277.715	146.838	304.655	0.0	10.031	871.798		
	<b>Subtotal</b>	<b>1.417</b>	<b>252.354</b>	<b>54.083</b>	<b>550.613</b>	<b>153.711</b>	<b>366.28</b>	<b>0.0</b>	<b>11.445</b>	<b>1389.903</b>		
	<b>Condition(%)</b>	<b>0.10%</b>	<b>18.16%</b>	<b>3.89%</b>	<b>39.62%</b>	<b>11.06%</b>	<b>26.35%</b>	<b>0.00%</b>	<b>0.82%</b>	<b>100.00%</b>		
		<b>Siaya Total</b>	<b>1.417</b>	<b>515.985</b>	<b>54.083</b>	<b>900.243</b>	<b>153.939</b>	<b>504.378</b>	<b>0.0</b>	<b>31.556</b>	<b>2161.601</b>	
		<b>Siaya Overall Condition</b>	<b>0.07%</b>	<b>23.87%</b>	<b>2.50%</b>	<b>41.65%</b>	<b>7.12%</b>	<b>23.33%</b>	<b>0.00%</b>	<b>1.46%</b>	<b>100.00%</b>	
<b>Busia</b>	<b>D</b>	Paved	0.0	0.755	0.0	0.0	0.0	0.0	0.0	0.0	0.755	
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		<b>Subtotal</b>	<b>0.0</b>	<b>0.755</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.755</b>	
		<b>Condition(%)</b>	<b>0.00%</b>	<b>100.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>	
	<b>E</b>	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	110.1	0.0	88.178	0.0	7.573	0.0	0.0	205.851	
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		<b>Subtotal</b>	<b>0.0</b>	<b>110.1</b>	<b>0.0</b>	<b>88.178</b>	<b>0.0</b>	<b>7.573</b>	<b>0.0</b>	<b>0.0</b>	<b>205.851</b>	
		<b>Condition(%)</b>	<b>0.00%</b>	<b>53.49%</b>	<b>0.00%</b>	<b>42.84%</b>	<b>0.00%</b>	<b>3.68%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>	
	<b>G</b>	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	0.0	0.0	0.773	0.0	0.0	0.0	0.0	0.773	
		Earth	0.0	50.175	0.0	103.293	0.0	99.685	0.0	0.0	253.153	
		<b>Subtotal</b>	<b>0.0</b>	<b>50.175</b>	<b>0.0</b>	<b>104.066</b>	<b>0.0</b>	<b>99.685</b>	<b>0.0</b>	<b>0.0</b>	<b>253.926</b>	
		<b>Condition(%)</b>	<b>0.00%</b>	<b>19.76%</b>	<b>0.00%</b>	<b>40.98%</b>	<b>0.00%</b>	<b>39.26%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>	
<b>NR</b>	Paved	0.0	0.0	0.0	0.505	0.0	0.0	0.0	0.0	0.505		
	Gravel	0.0	122.879	2.541	256.891	10.011	58.537	0.0	0.0	450.859		
	Earth	1.041	35.581	48.86	235.073	101.35	349.936	0.0	0.0	771.841		
	<b>Subtotal</b>	<b>1.041</b>	<b>158.46</b>	<b>51.401</b>	<b>492.469</b>	<b>111.361</b>	<b>408.473</b>	<b>0.0</b>	<b>0.0</b>	<b>1223.205</b>		
	<b>Condition(%)</b>	<b>0.09%</b>	<b>12.95%</b>	<b>4.20%</b>	<b>40.26%</b>	<b>9.10%</b>	<b>33.39%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>		
		<b>Busia Total</b>	<b>1.041</b>	<b>319.49</b>	<b>51.401</b>	<b>684.713</b>	<b>111.361</b>	<b>515.731</b>	<b>0.0</b>	<b>0.0</b>	<b>1683.737</b>	
		<b>Busia Overall Condition</b>	<b>0.06%</b>	<b>18.98%</b>	<b>3.05%</b>	<b>40.67%</b>	<b>6.61%</b>	<b>30.63%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>	
<b>Bungoma</b>	<b>D</b>	Paved	0.0	2.921	0.0	1.053	0.0	0.182	0.0	0.0	4.156	



COUNTY	ROAD CLASS	SURFACE TYPE	Road Length (km) & Condition (%)								Total Length (km)
			Good		Fair		Poor		Under Construction		
			<6	>6	<6	>6	<6	>6	<6	>6	
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>2.921</b>	<b>0.0</b>	<b>1.053</b>	<b>0.0</b>	<b>0.182</b>	<b>0.0</b>	<b>0.0</b>	<b>4.156</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>70.28%</b>	<b>0.00%</b>	<b>25.34%</b>	<b>0.00%</b>	<b>4.38%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	0.0	111.047	0.0	51.313	0.0	12.888	0.0	5.729	180.977
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>111.047</b>	<b>0.0</b>	<b>51.313</b>	<b>0.0</b>	<b>12.888</b>	<b>0.0</b>	<b>5.729</b>	<b>180.977</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>61.36%</b>	<b>0.00%</b>	<b>28.35%</b>	<b>0.00%</b>	<b>7.12%</b>	<b>0.00%</b>	<b>3.17%</b>	<b>100.00%</b>
		Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	<b>G</b>	Gravel	0.0	0.0	0.0	1.105	0.0	0.0	0.0	0.11	1.215
		Earth	0.0	44.909	0.0	128.382	0.0	230.085	0.0	18.883	422.259
		<b>Subtotal</b>	<b>0.0</b>	<b>44.909</b>	<b>0.0</b>	<b>129.487</b>	<b>0.0</b>	<b>230.085</b>	<b>0.0</b>	<b>18.993</b>	<b>423.474</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>10.60%</b>	<b>0.00%</b>	<b>30.58%</b>	<b>0.00%</b>	<b>54.33%</b>	<b>0.00%</b>	<b>4.49%</b>	<b>100.00%</b>
	<b>NR</b>	Paved	0.0	0.0	0.715	0.967	0.0	0.0	0.0	0.0	1.682
		Gravel	13.976	70.447	3.965	90.468	5.944	56.118	0.0	0.935	241.853
		Earth	15.137	64.981	132.309	377.759	477.496	614.924	0.0	1.983	1684.589
		<b>Subtotal</b>	<b>29.113</b>	<b>135.428</b>	<b>136.989</b>	<b>469.194</b>	<b>483.44</b>	<b>671.042</b>	<b>0.0</b>	<b>2.918</b>	<b>1928.124</b>
		<b>Condition(%)</b>	<b>1.51%</b>	<b>7.02%</b>	<b>7.10%</b>	<b>24.33%</b>	<b>25.07%</b>	<b>34.80%</b>	<b>0.00%</b>	<b>0.15%</b>	<b>100.00%</b>
		<b>Bungoma Total</b>	<b>29.113</b>	<b>294.305</b>	<b>136.989</b>	<b>651.047</b>	<b>483.44</b>	<b>914.197</b>	<b>0.0</b>	<b>27.64</b>	<b>2536.731</b>
		<b>Bungoma Overall Condi</b>	<b>1.15%</b>	<b>11.60%</b>	<b>5.40%</b>	<b>25.66%</b>	<b>19.06%</b>	<b>36.04%</b>	<b>0.00%</b>	<b>1.09%</b>	<b>100.00%</b>
<b>Kakamega</b>	<b>D</b>	Paved	0.0	4.148	0.0	1.467	0.0	0.434	0.0	0.0	7.519
		Gravel	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0
		Earth	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
		<b>Subtotal</b>	<b>0.0</b>	<b>5.051</b>	<b>0.0</b>	<b>2.034</b>	<b>0.0</b>	<b>0.434</b>	<b>0.0</b>	<b>0.0</b>	<b>7.519</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>67.18%</b>	<b>0.00%</b>	<b>27.05%</b>	<b>0.00%</b>	<b>5.77%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	0.0	102.108	0.97	118.995	0.0	19.334	0.0	15.354	256.761
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>102.108</b>	<b>0.97</b>	<b>118.995</b>	<b>0.0</b>	<b>19.334</b>	<b>0.0</b>	<b>15.354</b>	<b>256.761</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>39.77%</b>	<b>0.38%</b>	<b>46.34%</b>	<b>0.00%</b>	<b>7.53%</b>	<b>0.00%</b>	<b>5.98%</b>	<b>100.00%</b>
	<b>F</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	0.0	0.0	0.0	0.111	0.0	0.0	0.0	0.0	0.111
		Earth	0.0	2.066	0.0	0.0	0.0	0.0	0.0	0.0	2.066
		<b>Subtotal</b>	<b>0.0</b>	<b>2.066</b>	<b>0.0</b>	<b>0.111</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>2.177</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>94.90%</b>	<b>0.00%</b>	<b>5.10%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>G</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	0.0	0.0	0.0	0.194	0.0	0.0	0.0	0.0	0.194
		Earth	0.0	20.645	0.0	90.215	0.0	129.243	0.0	20.441	260.544
		<b>Subtotal</b>	<b>0.0</b>	<b>20.645</b>	<b>0.0</b>	<b>90.409</b>	<b>0.0</b>	<b>129.243</b>	<b>0.0</b>	<b>20.441</b>	<b>260.738</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>7.92%</b>	<b>0.00%</b>	<b>34.67%</b>	<b>0.00%</b>	<b>49.57%</b>	<b>0.00%</b>	<b>7.84%</b>	<b>100.00%</b>
	<b>NR</b>	Paved	0.0	0.708	0.0	0.167	0.0	0.615	0.0	0.0	1.49
		Gravel	8.828	85.966	18.408	146.506	7.007	34.111	0.0	5.782	306.608
		Earth	4.555	21.745	68.179	170.458	191.472	249.189	0.0	7.373	712.971
		<b>Subtotal</b>	<b>13.383</b>	<b>108.419</b>	<b>86.587</b>	<b>317.131</b>	<b>198.479</b>	<b>283.915</b>	<b>0.0</b>	<b>13.155</b>	<b>1021.069</b>
		<b>Condition(%)</b>	<b>1.31%</b>	<b>10.62%</b>	<b>8.48%</b>	<b>31.06%</b>	<b>19.44%</b>	<b>27.81%</b>	<b>0.00%</b>	<b>1.29%</b>	<b>100.00%</b>
		<b>Kakamega Total</b>	<b>13.383</b>	<b>238.289</b>	<b>87.557</b>	<b>528.68</b>	<b>198.479</b>	<b>432.926</b>	<b>0.0</b>	<b>48.95</b>	<b>1548.264</b>
		<b>Kakamega Overall Condi</b>	<b>0.86%</b>	<b>15.39%</b>	<b>5.66%</b>	<b>34.15%</b>	<b>12.82%</b>	<b>27.96%</b>	<b>0.00%</b>	<b>3.16%</b>	<b>100.00%</b>
<b>Vihiga</b>	<b>D</b>	Paved	0.0	0.152	0.0	0.0	0.0	0.0	0.0	0.0	0.152
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>0.152</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.152</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>100.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>E</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	0.0	9.649	0.0	40.022	0.0	1.117	0.0	0.72	51.508
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>9.649</b>	<b>0.0</b>	<b>40.022</b>	<b>0.0</b>	<b>1.117</b>	<b>0.0</b>	<b>0.72</b>	<b>51.508</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>18.73%</b>	<b>0.00%</b>	<b>77.70%</b>	<b>0.00%</b>	<b>2.17%</b>	<b>0.00%</b>	<b>1.40%</b>	<b>100.00%</b>
	<b>G</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Earth	0.0	1.03	0.0	2.607	0.0	1.779	0.0	0.0	5.416
		<b>Subtotal</b>	<b>0.0</b>	<b>1.03</b>	<b>0.0</b>	<b>2.607</b>	<b>0.0</b>	<b>1.779</b>	<b>0.0</b>	<b>0.0</b>	<b>5.416</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>19.02%</b>	<b>0.00%</b>	<b>48.14%</b>	<b>0.00%</b>	<b>32.85%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	<b>NR</b>	Paved	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		Gravel	3.952	52.047	9.617	138.695	2.734	12.405	0.0	0.0	219.45
		Earth	0.0	5.188	1.077	10.299	2.744	2.644	0.0	0.0	21.952



COUNTY	ROAD CLASS	SURFACE TYPE	Road Length (km) & Condition (%)								Total Length (km)
			Good		Fair		Poor		Under Construction		
			<6	>6	<6	>6	<6	>6	<6	>6	
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	10.353	0.0	93.108	0.0	46.894	0.0	0.0	150.355
		<b>Subtotal</b>	<b>0.0</b>	<b>10.353</b>	<b>0.0</b>	<b>93.108</b>	<b>0.0</b>	<b>46.894</b>	<b>0.0</b>	<b>0.0</b>	<b>150.355</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>6.89%</b>	<b>0.00%</b>	<b>61.93%</b>	<b>0.00%</b>	<b>31.19%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	NR	Paved	0.0	0.0	0.0	0.0	0.0	0.192	0.0	0.0	0.192
		Gravel	3.187	8.12	3.832	18.246	2.209	12.295	0.0	0.0	47.889
		Earth	40.593	55.812	48.631	177.95	106.412	312.812	0.0	0.121	742.331
		<b>Subtotal</b>	<b>43.78</b>	<b>63.932</b>	<b>52.463</b>	<b>196.196</b>	<b>108.621</b>	<b>325.299</b>	<b>0.0</b>	<b>0.121</b>	<b>790.412</b>
		<b>Condition(%)</b>	<b>5.54%</b>	<b>8.09%</b>	<b>6.64%</b>	<b>24.82%</b>	<b>13.74%</b>	<b>41.16%</b>	<b>0.00%</b>	<b>0.02%</b>	<b>100.00%</b>
		<b>Transzoia Total</b>	<b>43.78</b>	<b>80.329</b>	<b>52.463</b>	<b>299.739</b>	<b>108.621</b>	<b>385.301</b>	<b>0.0</b>	<b>0.121</b>	<b>970.354</b>
		<b>Transzoia Overall Condi</b>	<b>4.51%</b>	<b>8.28%</b>	<b>5.41%</b>	<b>30.89%</b>	<b>11.19%</b>	<b>39.71%</b>	<b>0.00%</b>	<b>0.01%</b>	<b>100.00%</b>
								<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
ElegeyoMarakwet	E	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	10.467	0.0	19.619	0.0	4.866	0.0	13.488	48.44
		Earth	0.0	10.467	0.0	19.619	0.0	4.866	0.0	13.488	48.44
		<b>Subtotal</b>	<b>0.00%</b>	<b>21.61%</b>	<b>0.00%</b>	<b>40.50%</b>	<b>0.00%</b>	<b>10.05%</b>	<b>0.00%</b>	<b>27.84%</b>	<b>100.00%</b>
		<b>Condition(%)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
	G	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	0.0	0.0	0.17	0.0	0.22	0.0	0.0	0.39
		Earth	0.0	3.978	0.0	18.224	0.0	9.845	0.0	14.633	46.68
		<b>Subtotal</b>	<b>0.0</b>	<b>3.978</b>	<b>0.0</b>	<b>18.394</b>	<b>0.0</b>	<b>10.065</b>	<b>0.0</b>	<b>14.633</b>	<b>47.07</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>8.45%</b>	<b>0.00%</b>	<b>39.08%</b>	<b>0.00%</b>	<b>21.38%</b>	<b>0.00%</b>	<b>31.09%</b>	<b>100.00%</b>
	NR	Paved	0.0	0.19	0.0	2.133	0.0	0.0	0.0	0.0	2.323
		Gravel	0.0	12.756	5.598	35.962	0.124	18.823	0.0	0.0	73.263
		Earth	2.503	7.627	10.545	65.288	14.791	40.261	0.0	6.186	147.201
		<b>Subtotal</b>	<b>2.503</b>	<b>20.573</b>	<b>16.143</b>	<b>103.383</b>	<b>14.915</b>	<b>59.084</b>	<b>0.0</b>	<b>6.186</b>	<b>222.787</b>
		<b>Condition(%)</b>	<b>1.12%</b>	<b>9.23%</b>	<b>7.25%</b>	<b>46.40%</b>	<b>6.69%</b>	<b>26.52%</b>	<b>0.00%</b>	<b>2.78%</b>	<b>100.00%</b>
		<b>ElegeyoMarakwet Total</b>	<b>2.503</b>	<b>35.018</b>	<b>16.143</b>	<b>141.396</b>	<b>14.915</b>	<b>74.015</b>	<b>0.0</b>	<b>34.307</b>	<b>318.297</b>
		<b>ElegeyoMarakwet Over</b>	<b>0.79%</b>	<b>11.00%</b>	<b>5.07%</b>	<b>44.42%</b>	<b>4.69%</b>	<b>23.25%</b>	<b>0.00%</b>	<b>10.78%</b>	<b>100.00%</b>
WestPokot	E	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	23.463	0.0	63.095	0.0	17.368	0.0	13.777	117.309
		<b>Subtotal</b>	<b>0.0</b>	<b>23.463</b>	<b>0.0</b>	<b>63.095</b>	<b>0.0</b>	<b>17.368</b>	<b>0.0</b>	<b>13.777</b>	<b>117.703</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>19.93%</b>	<b>0.00%</b>	<b>53.61%</b>	<b>0.00%</b>	<b>14.76%</b>	<b>0.00%</b>	<b>11.70%</b>	<b>100.00%</b>
		Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	G	Earth	0.0	4.052	0.0	11.891	0.0	82.652	0.0	7.13	105.725
		<b>Subtotal</b>	<b>0.0</b>	<b>4.052</b>	<b>0.0</b>	<b>11.891</b>	<b>0.0</b>	<b>82.652</b>	<b>0.0</b>	<b>7.13</b>	<b>105.725</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>3.83%</b>	<b>0.00%</b>	<b>11.25%</b>	<b>0.00%</b>	<b>78.18%</b>	<b>0.00%</b>	<b>6.74%</b>	<b>100.00%</b>
	NR	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	0.0	0.0	25.462	8.643	41.334	0.0	0.0	75.439
		Earth	2.172	1.141	7.416	39.091	64.975	168.348	0.0	0.584	283.727
		<b>Subtotal</b>	<b>2.172</b>	<b>1.141</b>	<b>7.416</b>	<b>64.553</b>	<b>73.618</b>	<b>209.682</b>	<b>0.0</b>	<b>0.584</b>	<b>359.166</b>
		<b>Condition(%)</b>	<b>0.60%</b>	<b>0.32%</b>	<b>2.06%</b>	<b>17.97%</b>	<b>20.50%</b>	<b>58.38%</b>	<b>0.00%</b>	<b>0.16%</b>	<b>100.00%</b>
		<b>WestPokot Total</b>	<b>2.172</b>	<b>28.656</b>	<b>7.416</b>	<b>139.539</b>	<b>73.618</b>	<b>309.702</b>	<b>0.0</b>	<b>21.491</b>	<b>582.594</b>
		<b>WestPokot Overall Con</b>	<b>0.37%</b>	<b>4.92%</b>	<b>1.27%</b>	<b>23.95%</b>	<b>12.64%</b>	<b>53.16%</b>	<b>0.00%</b>	<b>3.69%</b>	<b>100.00%</b>
Baringo	D	Paved	0.0	3.759	0.0	7.244	0.0	0.0	0.0	0.0	11.003
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		<b>Subtotal</b>	<b>0.0</b>	<b>3.759</b>	<b>0.0</b>	<b>7.244</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>11.003</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>34.16%</b>	<b>0.00%</b>	<b>65.84%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
	E	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Gravel	0.0	4.116	0.86	105.044	0.0	40.157	0.0	0.0	150.177
		Earth	0.0	0.0	0.0	0.0	0.0	4.125	0.0	0.0	4.125
		<b>Subtotal</b>	<b>0.0</b>	<b>4.116</b>	<b>0.86</b>	<b>105.044</b>	<b>0.0</b>	<b>44.282</b>	<b>0.0</b>	<b>0.0</b>	<b>154.302</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>2.67%</b>	<b>0.56%</b>	<b>68.08%</b>	<b>0.00%</b>	<b>28.70%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>100.00%</b>
		Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	G	Gravel	0.0	0.0	0.0	0.593	0.0	0.241	0.0	0.0	0.834
		Earth	0.0	6.718	0.0	107.855	0.0	43.388	0.0	11.427	169.388
		<b>Subtotal</b>	<b>0.0</b>	<b>6.718</b>	<b>0.0</b>	<b>108.448</b>	<b>0.0</b>	<b>43.629</b>	<b>0.0</b>	<b>11.427</b>	<b>170.222</b>
		<b>Condition(%)</b>	<b>0.00%</b>	<b>3.95%</b>	<b>0.00%</b>	<b>63.71%</b>	<b>0.00%</b>	<b>25.63%</b>	<b>0.00%</b>	<b>6.71%</b>	<b>100.00%</b>
	NR	Paved	0.0	0.0	0.0	1.939	0.0	0.832	0.0	0.0	2.771
		Gravel	0.699	4.711	0.0	61.493	2.798	63.341	0.0	2.509	135.551
		Earth	0.126	1.69	7.106	91.129	26.991	171.628	0.0	2.114	300.784
		<b>Subtotal</b>	<b>0.825</b>	<b>6.401</b>	<b>7.106</b>	<b>154.561</b>	<b>29.789</b>	<b>235.801</b>	<b>0.0</b>	<b>4.623</b>	<b>439.106</b>

COUNTY	ROAD CLASS	SURFACE TYPE	Road Length (km) & Condition (%)								Total Length (km)	
			Good		Fair		Poor		Under Construction			
			<6	>6	<6	>6	<6	>6	<6	>6		
		Condition(%)	0.19%	1.46%	1.62%	35.20%	6.78%	53.70%	0.00%	1.05%	100.00%	
		Baringo Total	0.825	20.994	7.966	375.297	29.789	323.712	0.0	16.05	774.633	
		Baringo Overall Condi	0.11%	2.71%	1.03%	48.45%	3.85%	41.79%	0.00%	2.07%	100.00%	
Marsabit	D	Paved	0.0	3.475	0.0	9.685	0.0	0.944	0.0	0.287	14.391	
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Earth	0.0	3.475	0.0	9.685	0.0	0.944	0.0	0.287	14.391	
		Subtotal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
			Condition(%)	0.00%	24.15%	0.00%	67.30%	0.00%	6.56%	0.00%	1.99%	100.00%
	E	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	74.677	0.073	170.786	0.0	14.63	0.0	12.399	272.565	
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Subtotal	0.0	74.677	0.073	170.786	0.0	14.63	0.0	12.399	272.565	
			Condition(%)	0.00%	27.40%	0.03%	62.66%	0.00%	5.37%	0.00%	4.55%	100.00%
	G	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	0.0	0.0	0.178	0.0	0.0	0.0	0.0	0.178	
		Earth	0.0	50.053	0.0	71.903	0.0	177.675	0.0	0.0	299.631	
		Subtotal	0.0	50.053	0.0	72.081	0.0	177.675	0.0	0.0	299.809	
			Condition(%)	0.00%	16.69%	0.00%	24.04%	0.00%	59.26%	0.00%	0.00%	100.00%
NR	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Gravel	0.0	13.777	3.449	65.989	0.0	14.539	0.0	0.176	97.93		
	Earth	0.0	0.355	2.967	40.173	42.687	84.952	0.0	0.0	171.134		
	Subtotal	0.0	14.132	6.416	106.162	42.687	99.491	0.0	0.176	269.064		
		Condition(%)	0.00%	5.25%	2.38%	39.46%	15.86%	36.98%	0.00%	0.07%	100.00%	
		Marsabit Total	0.0	142.337	6.489	358.714	42.687	292.74	0.0	12.862	855.829	
		Marsabit Overall Condi	0.00%	16.63%	0.76%	41.91%	4.99%	34.21%	0.00%	1.50%	100.00%	
Samburu	E	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	14.247	0.0	58.813	0.0	5.416	0.0	0.0	78.476	
		Earth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Subtotal	0.0	14.247	0.0	58.813	0.0	5.416	0.0	0.0	78.476	
			Condition(%)	0.00%	18.15%	0.00%	74.94%	0.00%	6.90%	0.00%	0.00%	100.00%
	G	Paved	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	
		Gravel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Earth	0.0	41.687	0.0	83.434	0.0	26.634	0.0	18.67	164.64	
		Subtotal	0.0	41.687	0.0	83.434	0.0	26.634	0.0	18.67	170.425	
			Condition(%)	0.00%	24.46%	0.00%	48.96%	0.00%	15.63%	0.00%	10.95%	100.00%
	NR	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	0.314	0.0	11.944	0.0	4.697	0.0	0.0	16.955	
		Earth	2.495	64.59	0.0	23.489	23.689	25.831	0.0	0.0	140.094	
		Subtotal	2.495	64.904	0.0	35.433	23.689	30.528	0.0	0.0	157.049	
			Condition(%)	1.59%	41.33%	0.00%	22.56%	15.08%	19.44%	0.00%	0.00%	100.00%
		Samburu Total	2.495	120.838	0.0	177.68	23.689	62.578	0.0	18.67	405.95	
		Samburu Overall Condi	0.61%	29.77%	0.00%	43.77%	5.84%	15.42%	0.00%	4.60%	100.00%	
Turkana	D	Paved	0.0	4.079	0.0	0.0	0.0	0.0	0.0	0.0	4.079	
		Gravel	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	
		Earth	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	
		Subtotal	0.0	0	0.0	0.0	0.0	0	0.0	0.0	4.079	
			Condition(%)	0.00%	13.48%	0.00%	0.00%	0.00%	86.52%	0.00%	0.00%	100.00%
	E	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	56.012	0.0	162.949	0.0	49.578	0.0	10.351	278.89	
		Earth	0.0	0.539	0.0	0.462	0.694	6.975	0.0	0.0	8.67	
		Subtotal	0.0	56.551	0.0	163.411	0.694	56.553	0.0	10.351	287.56	
			Condition(%)	0.00%	19.67%	0.00%	56.83%	0.24%	19.67%	0.00%	3.60%	100.00%
	G	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Gravel	0.0	0.0	0.0	0.0	0.0	3.671	0.0	0.0	3.671	
		Earth	0.0	25.61	0.373	277.479	0.0	134.993	0.0	19.387	457.842	
		Subtotal	0.0	25.61	0.373	277.479	0.0	138.664	0.0	19.387	461.513	
			Condition(%)	0.00%	5.55%	0.08%	60.12%	0.00%	30.05%	0.00%	4.20%	100.00%
NR	Paved	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Gravel	0.0	19.336	5.839	27.705	0.0	13.354	0.0	0.0	66.234		
	Earth	0.0	10.687	6.208	136.143	34.582	108.001	0.0	0.0	295.621		
	Subtotal	0.0	30.023	12.047	163.848	34.582	121.355	0.0	0.0	361.855		
		Condition(%)	0.00%	8.30%	3.33%	45.28%	9.56%	33.54%	0.00%	0.00%	100.00%	
		Turkana Total	0.0	112.734	12.42	604.738	35.276	320.101	0.0	29.738	1115.007	
		Turkana Overall Condi	0.00%	10.11%	1.11%	54.24%	3.16%	28.71%	0.00%	2.67%	100.00%	
<b>Total Total</b>			<b>158.585</b>	<b>3604.76</b>	<b>692.259</b>	<b>9367.98</b>	<b>2647.31</b>	<b>9215.94</b>	<b>5.687</b>	<b>357.782</b>	<b>26050.307</b>	
<b>Total Overall Condition%</b>			<b>0.61%</b>	<b>13.84%</b>	<b>2.66%</b>	<b>35.96%</b>	<b>10.16%</b>	<b>35.38%</b>	<b>0.02%</b>	<b>1.37%</b>	<b>100.00%</b>	

**TABLE 3A: SUMMARY OF ROAD RESERVE WIDTH  
(OVERALL)**

**TABLE 3A: SUMMARY OF ROAD RESERVE WIDTH (OVERALL)**

<b>ROAD RESERVE WIDTH (m)</b>	<b>&lt;6m</b>	<b>6-9</b>	<b>9-25</b>	<b>25-40</b>	<b>&gt;40</b>	<b>Grand Total</b>
<b>LENGTH (km)</b>	5,543.65	26,690.43	42,052.20	2,104.70	2,790.45	<b>79,181.43</b>
<b>PERCENTAGE (%)</b>	<b>7.00%</b>	<b>33.71%</b>	<b>53.11%</b>	<b>2.66%</b>	<b>3.52%</b>	<b>100.00%</b>

Note: From the table above, the road length of the Road Reserve width < 6 m is 7.1% of the total Road Length covered.

**TABLE 3B: SUMMARY OF ROAD RESERVE WIDTH (PER COUNTY)**

**TABLE 3B: SUMMARY OF ROAD RESERVE WIDTH (PER COUNTY)**

COUNTY		ROAD RESERVE WIDTH (m)					TOTAL LENGTH (Km)
		<6m	6m-9m	9m-25m	25m-40m	>40m	
1	Bomet	473.703	1194.626	2029.591	103.047	62.481	3863.448
2	Kericho	359.393	1400.386	2318.311	120.196	101.042	4299.328
3	Nyamira	109.939	464.563	1009.232	108.603	6.194	1698.531
4	Kisii	167.803	797.65	1984.967	143.505	33.312	3127.237
5	Migori	255.706	1377.452	2175.85	12.406	146.298	3967.712
6	Homabay	526.963	1551.443	1933.533	140.037	89.095	4241.071
7	Kisumu	289.506	1534.272	1653.087	77.626	232.104	3786.595
8	Siaya	275.045	1559.293	2153.479	121.084	162.644	4271.545
9	Busia	199.606	1396.747	1482.501	79.199	75.402	3233.455
10	Bungoma	804.331	2007.02	2172.854	106.711	127.16	5218.076
11	Kakamega	416.574	1508.067	3124.071	64.869	178.656	5292.237
12	Vihiga	48.499	399.925	488.784	70.106	35.189	1042.503
13	Nandi	97.087	1305.228	1741.461	110.244	86.395	3340.415
14	UasinGishu	127.769	1897.115	3345.403	214.95	176.378	5761.615
15	Transzoia	223.147	1066.461	1329.71	64.314	95.214	2778.846
16	ElegeyoMarakwet	75.319	841.087	1147.727	68.948	62.233	2195.314
17	Baringo	152.645	994.275	1249.329	44.216	111.324	2551.789
18	WestPokot	134.794	1059.273	2336.853	151.848	146.823	3829.591
19	Marsabit	128.211	1319.883	3758.841	76.165	371.796	5654.896
20	Samburu	77.127	891.502	1619.949	143.709	104.499	2836.786
21	Turkana	600.482	2124.161	2996.667	82.918	386.215	6190.443
<b>Total (km)</b>		<b>5,543.65</b>	<b>26,690.43</b>	<b>42,052.20</b>	<b>2,104.70</b>	<b>2,790.45</b>	<b>79,181.43</b>
<b>Percentages (%)</b>		<b>7.0%</b>	<b>33.7%</b>	<b>53.1%</b>	<b>2.7%</b>	<b>3.5%</b>	<b>100.0%</b>



**TABLE 4A: ROAD REGISTER – CLASSIFIED ROADS PER  
COUNTY**  
**(BOUND AS VOLUME 2)**

**TABLE 4B: ROAD REGISTER – NARROW ROADS PER  
COUNTY**  
**(BOUND AS VOLUME 2)**

## **TABLE 5A: SUMMARY OF DRAINAGE STRUCTURES ON CLASSIFIED ROADS**

**TABLE - 5A: SUMMARY OF DRAINAGE STRUCTURES ON CLASSIFIED ROADS (OVERALL)**

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Constructi	
Overall							
	Bridges	Arch	1	11	0	0	12
		Bailey	5	25	0	0	30
		Girder	224	744	63	0	1031
		Truss	2	30	1	0	33
		Tunnel	2	2	0	0	4
	<b>Bridge Total</b>	<b>Total for Bridges</b>	<b>234</b>	<b>812</b>	<b>64</b>	<b>0</b>	<b>1110</b>
		Condition (%)	21%	73%	6%	0%	100%
	Pipe Culverts						
		<600	111	215	140	0	466
		>900	45	391	14	0	450
		>900	45	391	14	0	450
		<b>Total for pipes</b>	<b>5,051</b>	<b>20,349</b>	<b>3,792</b>	<b>0</b>	<b>29,192</b>
		Condition (%)	17%	70%	13%	0%	100%
	Arch Culverts		3	35	2	0	40
	Box Culverts		57	1,032	10	0	1,099
	Armco Culverts		213	332	156	0	701
	Drifts		176	440	120	0	736
Others		5	6	3	0	14	
<b>Total</b>		<b>454</b>	<b>1,845</b>	<b>291</b>	<b>0</b>	<b>2,590</b>	
	Condition (%)	18%	71%	11%	0%	100%	

**TABLE 5B: SUMMARY OF DRAINAGE STRUCTURES ON  
CLASSIFIED ROADS PER COUNTY**

**TABLE - 5B: SUMMARY OF DRAINAGE STRUCTURES ON CLASSIFIED ROADS (PER COUNTY)**

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
<b>1</b>	<b>Bomet</b>						
	Bridges	Arch					
		Bailey		8			8
		Girder	9	58		3	70
		Truss		5			5
		Tunnel	2	1			3
		<b>Total for Bridge</b>	<b>11</b>	<b>72</b>		<b>3</b>	<b>86</b>
		Condition (%)	13%	84%	0%	3%	100%
	Pipe Culverts	<600	26	26		21	73
		600m-900	245	717		239	1201
		>900		50			50
		<b>Total for Pipes</b>	<b>271</b>	<b>793</b>		<b>260</b>	<b>1,324</b>
		Condition (%)	20%	60%	0%	20%	100%
	Arch Culverts						
	Box Culverts			26			26
	Armco Culverts		10	10		1	21
	Drifts			1		1	2
	Others						
	<b>Total</b>		<b>10</b>	<b>37</b>	<b>0</b>	<b>2</b>	<b>49</b>
	Condition (%)		20%	76%	0%	4%	100%

<b>2</b>	<b>Kericho</b>						
	Bridges	Arch	1	7			8
		Bailey		2			2
		Girder	34	52		9	95
		Truss		4			4
		Tunnel					
		<b>Total for Bridge</b>	<b>35</b>	<b>65</b>		<b>9</b>	<b>109</b>
		Condition (%)	32%	60%	0%	8%	100%
	Pipe Culverts	<600	29	47		29	105
		600m-900	427	1833		260	2520
		>900	3	11		3	17
		<b>Total for Pipes</b>	<b>459</b>	<b>1891</b>		<b>292</b>	<b>2,642</b>
		Condition (%)	17%	72%	0%	11%	100%
	Arch Culverts			3			3
	Box Culverts			36			36
	Armco Culverts		23	33		14	70
	Drifts		2	2		1	5
	Others			2			2
	<b>Total</b>		<b>25</b>	<b>76</b>	<b>0</b>	<b>15</b>	<b>116</b>

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
	Condition (%)		22%	66%	0%	13%	100%

3	Nyamira							
	Bridges	Arch						
		Bailey						
		Girder	16	33		4	53	
		Truss						
		Tunnel						
		<b>Total for Bridge</b>	<b>16</b>	<b>33</b>		<b>4</b>	<b>53</b>	
		Condition (%)	30%	62%	0%	8%	100%	
	Pipe Culverts	<600		4		2	6	
		600m-900	335	631		253	1219	
		>900		18			18	
		<b>Total for Pipes</b>	<b>335</b>	<b>653</b>		<b>255</b>	<b>1,243</b>	
		Condition (%)	27%	53%	0%	21%	100%	
	Arch Culverts							
	Box Culverts		15	53			68	
	Armco Culverts		19	26		13	58	
	Drifts							
	Others		1				1	
	<b>Total</b>		<b>35</b>	<b>79</b>	<b>0</b>	<b>13</b>	<b>127</b>	
	Condition (%)		28%	62%	0%	10%	100%	

4	Kisii							
	Bridges	Arch						
		Bailey						
		Girder	13	35		2	50	
		Truss		1			1	
		Tunnel						
		<b>Total for Bridge</b>	<b>13</b>	<b>36</b>		<b>2</b>	<b>51</b>	
		Condition (%)	25%	71%	0%	4%	100%	
	Pipe Culverts	<600	1	5		1	7	
		600m-900	505	1637		264	2406	
		>900	6	36			42	
		<b>Total for Pipes</b>	<b>512</b>	<b>1678</b>		<b>265</b>	<b>2,455</b>	
		Condition (%)	21%	68%	0%	11%	100%	
	Arch Culverts							
	Box Culverts		2	45			47	
	Armco Culverts		34	17		11	62	
	Drifts			1			1	
	Others		2				2	

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
	<b>Total</b>		<b>38</b>	<b>63</b>	<b>0</b>	<b>11</b>	<b>112</b>
	Condition (%)		34%	56%	0%	10%	100%

5	Migori						
	Bridges	Arch					
		Bailey		3			3
		Girder	11	59			70
		Truss					
		Tunnel					
		<b>Total for Bridge</b>	<b>11</b>	<b>62</b>			<b>73</b>
		Condition (%)	15%	85%	0%	0%	100%
	Pipe Culverts	<600	2	7		5	14
		600m-900	249	1250		148	1647
		>900	1	5			6
		<b>Total for Pipes</b>	<b>252</b>	<b>1262</b>		<b>153</b>	<b>1,667</b>
		Condition (%)	15%	76%	0%	9%	100%
	Arch Culverts			9			9
	Box Culverts		1	55			56
	Armco Culverts		14	31		14	59
	Drifts		6	9		2	17
	Others						
	<b>Total</b>		<b>21</b>	<b>104</b>	<b>0</b>	<b>16</b>	<b>141</b>
	Condition (%)		15%	74%	0%	11%	100%

6	Homa Bay						
	Bridges	Arch					
		Bailey		1			1
		Girder	4	33		1	38
		Truss		1			1
		Tunnel					
		<b>Total for Bridge</b>	<b>4</b>	<b>35</b>		<b>1</b>	<b>40</b>
		Condition (%)	10%	88%	0%	3%	100%
	Pipe Culverts	<600	5	4		1	10
		600m-900	323	1511		274	2108
		>900	4	51		1	56
		<b>Total for Pipes</b>	<b>332</b>	<b>1566</b>		<b>276</b>	<b>2,174</b>
		Condition (%)	15%	72%	0%	13%	100%
	Arch Culverts		2	4		1	7
	Box Culverts		2	113		1	116
	Armco Culverts		9	6		20	35
	Drifts		7	13		9	29



COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
	Others			1			1
	<b>Total</b>		<b>20</b>	<b>137</b>	<b>0</b>	<b>31</b>	<b>188</b>
	Condition (%)		11%	73%	0%	16%	100%

7	Kisumu						
	Bridges	Arch					
		Bailey		1			1
		Girder	10	40		6	56
		Truss		4			4
		Tunnel		1			1
		<b>Total for Bridge</b>	<b>10</b>	<b>46</b>		<b>6</b>	<b>62</b>
		Condition (%)	16%	74%	0%	10%	100%
	Pipe Culverts	<600	1	12		6	19
		600m-900	378	1366		283	2027
		>900	9	26		6	41
		<b>Total for Pipes</b>	<b>388</b>	<b>1404</b>		<b>295</b>	<b>2,087</b>
		Condition (%)	19%	67%	0%	14%	100%
	Arch Culverts		1	1			2
	Box Culverts		4	128			132
	Armco Culverts		17	37		5	59
	Drifts		1	14		3	18
	Others						
	<b>Total</b>		<b>23</b>	<b>180</b>	<b>0</b>	<b>8</b>	<b>211</b>
	Condition (%)		11%	85%	0%	4%	100%

8	Siaya						
	Bridges	Arch					
		Bailey		5			5
		Girder	2	22			24
		Truss		2			2
		Tunnel					
		<b>Total for Bridge</b>	<b>2</b>	<b>29</b>			<b>31</b>
		Condition (%)	6%	94%	0%	0%	100%
	Pipe Culverts	<600	1	10			11
		600m-900	223	1019		189	1431
		>900	2	35			37
		<b>Total for Pipes</b>	<b>226</b>	<b>1064</b>		<b>189</b>	<b>1,479</b>
		Condition (%)	15%	72%	0%	13%	100%
	Arch Culverts			1			1
	Box Culverts		1	57			58
	Armco Culverts		3	18		3	24

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
	Drifts		4	3			7
	Others						
	<b>Total</b>		<b>8</b>	<b>79</b>	<b>0</b>	<b>3</b>	<b>90</b>
	Condition (%)		9%	88%	0%	3%	100%

9	Busia						
	Bridges	Arch					
		Bailey					
		Girder	4	28		1	33
		Truss					
		Tunnel					
		<b>Total for Bridge</b>	<b>4</b>	<b>28</b>		<b>1</b>	<b>33</b>
		Condition (%)	12%	85%	0%	3%	100%
	Pipe Culverts	<600		6			6
		600m-900	144	747		56	947
		>900		9			9
		<b>Total for Pipes</b>	<b>144</b>	<b>762</b>		<b>56</b>	<b>962</b>
		Condition (%)	15%	79%	0%	6%	100%
	Arch Culverts						
	Box Culverts		2	37			39
	Armco Culverts		7	2		3	12
	Drifts						
	Others						
	<b>Total</b>		<b>9</b>	<b>39</b>	<b>0</b>	<b>3</b>	<b>51</b>
	Condition (%)		18%	76%	0%	6%	100%

10	Bungoma						
	Bridges	Arch					
		Bailey		3			3
		Girder	19	53		8	80
		Truss					
		Tunnel					
		<b>Total for Bridge</b>	<b>19</b>	<b>56</b>		<b>8</b>	<b>83</b>
		Condition (%)	23%	67%	0%	10%	100%
	Pipe Culverts	<600	2	4			6
		600m-900	300	1201		171	1672
		>900	3	16			19
		<b>Total for Pipes</b>	<b>305</b>	<b>1221</b>		<b>171</b>	<b>1,697</b>
		Condition (%)	18%	72%	0%	10%	100%
	Arch Culverts			5			5

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
	Box Culverts		7	55		2	64
	Armco Culverts		8	9		4	21
	Drifts		1			1	2
	Others			1			1
	<b>Total</b>		<b>16</b>	<b>70</b>	<b>0</b>	<b>7</b>	<b>93</b>
	Condition (%)		17%	75%	0%	8%	100%

<b>11</b>	<b>Kakamega</b>						
	Bridges	Arch		2			2
		Bailey		1			1
		Girder	23	90		3	116
		Truss		2			2
		Tunnel					
		<b>Total for Bridge</b>	<b>23</b>	<b>95</b>		<b>3</b>	<b>121</b>
		Condition (%)	19%	79%	0%	2%	100%
	Pipe Culverts	<600	3	5		4	12
		600m-900	230	1091		159	1480
		>900	2	12		1	15
		<b>Total for Pipes</b>	<b>235</b>	<b>1108</b>		<b>164</b>	<b>1,507</b>
		Condition (%)	16%	74%	0%	11%	100%
	Arch Culverts			1			1
	Box Culverts		3	54			57
	Armco Culverts		14	53		12	79
	Drifts			1		1	2
	Others						
	<b>Total</b>		<b>17</b>	<b>109</b>	<b>0</b>	<b>13</b>	<b>139</b>
	Condition (%)		12%	78%	0%	9%	100%

<b>12</b>	<b>Vihiga</b>						
	Bridges	Arch					
		Bailey					
		Girder	7	35			42
		Truss					
		Tunnel					
		<b>Total for Bridge</b>	<b>7</b>	<b>35</b>			<b>42</b>
		Condition (%)	17%	83%	0%	0%	100%
	Pipe Culverts	<600	4	1		1	6
		600m-900	118	371		69	558
		>900	3	18			21
		<b>Total for Pipes</b>	<b>125</b>	<b>390</b>		<b>70</b>	<b>585</b>
		Condition (%)	21%	67%	0%	12%	100%

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
	Arch Culverts						
	Box Culverts		2	22		1	25
	Armco Culverts		7	6		5	18
	Drifts						
	Others						
	<b>Total</b>		<b>9</b>	<b>28</b>	<b>0</b>	<b>6</b>	<b>43</b>
	Condition (%)		21%	65%	0%	14%	100%

13	Nandi						
	Bridges	Arch					
		Bailey					
		Girder	16	56		3	75
		Truss					
		Tunnel					
		<b>Total for Bridge</b>	<b>16</b>	<b>56</b>		<b>3</b>	<b>75</b>
		Condition (%)	21%	75%	0%	4%	100%
	Pipe Culverts	<600	17	9		38	64
		600m-900	261	877		285	1423
		>900	1	16			17
		<b>Total for Pipes</b>	<b>279</b>	<b>902</b>		<b>323</b>	<b>1,504</b>
		Condition (%)	19%	60%	0%	21%	100%
	Arch Culverts						
	Box Culverts		7	28		1	36
	Armco Culverts		15	32		10	57
	Drifts			2		1	3
	Others		2	2		2	6
	<b>Total</b>		<b>24</b>	<b>64</b>	<b>0</b>	<b>14</b>	<b>102</b>
	Condition (%)		24%	63%	0%	14%	100%

14	Uasin Gishu						
	Bridges	Arch		1			1
		Bailey	2				2
		Girder	31	79		14	124
		Truss		4		1	5
		Tunnel					
		<b>Total for Bridge</b>	<b>33</b>	<b>84</b>		<b>15</b>	<b>132</b>
		Condition (%)	25%	64%	0%	11%	100%
	Pipe Culverts	<600	7	15		9	31
		600m-900	274	1444		223	1941
		>900	1	9			10
		<b>Total for Pipes</b>	<b>282</b>	<b>1468</b>		<b>232</b>	<b>1,982</b>
		Condition (%)	14%	74%	0%	12%	100%

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
	Arch Culverts					1	1
	Box Culverts		3	48		4	55
	Armco Culverts		16	19		9	44
	Drifts		1	1			2
	Others					1	1
	<b>Total</b>		<b>20</b>	<b>68</b>	<b>0</b>	<b>15</b>	<b>103</b>
	Condition (%)		19%	66%	0%	15%	100%

15	Trans Nzoia						
	Bridges	Arch		1			1
		Bailey					
		Girder	12	22		4	38
		Truss					
		Tunnel					
		<b>Total for Bridge</b>	<b>12</b>	<b>23</b>		<b>4</b>	<b>39</b>
		Condition (%)	31%	59%	0%	10%	100%
	Pipe Culverts	<600	1	14		4	19
		600m-900	197	860		107	1164
		>900	6	21		1	28
		<b>Total for Pipes</b>	<b>204</b>	<b>895</b>		<b>112</b>	<b>1,211</b>
		Condition (%)	17%	74%	0%	9%	100%
	Arch Culverts			1			1
	Box Culverts		1	29		1	31
	Armco Culverts		3	5		1	9
	Drifts						
	Others						
	<b>Total</b>		<b>4</b>	<b>35</b>	<b>0</b>	<b>2</b>	<b>41</b>
	Condition (%)		10%	85%	0%	5%	100%

16	Elgeyo-Marakwet						
	Bridges	Arch					
		Bailey	2				2
		Girder	5	22		2	29
		Truss	1	1			2
		Tunnel					
		<b>Total for Bridge</b>	<b>8</b>	<b>23</b>		<b>2</b>	<b>33</b>
		Condition (%)	24%	70%	0%	6%	100%
	Pipe Culverts	<600	2	5		7	14
		600m-900	314	1139		280	1733
		>900	3	23		2	28
		<b>Total for Pipes</b>	<b>319</b>	<b>1167</b>		<b>289</b>	<b>1,775</b>

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
		Condition (%)	18%	66%	0%	16%	100%
	Arch Culverts						
	Box Culverts		1	35			36
	Armco Culverts		10	12		27	49
	Drifts		20	55		6	81
	Others						
	<b>Total</b>		<b>31</b>	<b>102</b>	<b>0</b>	<b>33</b>	<b>166</b>
	Condition (%)		19%	61%	0%	20%	100%

<b>17</b>	<b>Baringo</b>						
	Bridges	Arch					
		Bailey	1	1			2
		Girder	6	1		2	9
		Truss		2			2
		Tunnel					
		<b>Total for Bridge</b>	<b>7</b>	<b>4</b>		<b>2</b>	<b>13</b>
		Condition (%)	54%	31%	0%	15%	100%
	Pipe Culverts	<600	2	6		3	11
		600m-900	174	557		206	937
		>900		1			1
		<b>Total for Pipes</b>	<b>176</b>	<b>564</b>		<b>209</b>	<b>949</b>
		Condition (%)	19%	59%	0%	22%	100%
	Arch Culverts						
	Box Culverts			5			5
	Armco Culverts			1		1	2
	Drifts		5	33		8	46
	Others						
	<b>Total</b>		<b>5</b>	<b>39</b>	<b>0</b>	<b>9</b>	<b>53</b>
	Condition (%)		9%	74%	0%	17%	100%

<b>18</b>	<b>West Pokot</b>						
	Bridges	Arch					
		Bailey					
		Girder		14		1	15
		Truss	1	4			5
		Tunnel					
		<b>Total for Bridge</b>	<b>1</b>	<b>18</b>		<b>1</b>	<b>20</b>
		Condition (%)	5%	90%	0%	5%	100%
	Pipe Culverts	<600		6			6
		600m-900	75	631		108	814
		>900		9			9

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
		<b>Total for Pipes</b>	<b>75</b>	<b>646</b>		<b>108</b>	<b>829</b>
		Condition (%)	9%	78%	0%	13%	100%
		Arch Culverts					
		Box Culverts		9			9
		Armco Culverts	2	8		1	11
		Drifts	35	65		51	151
		Others					
		<b>Total</b>	<b>37</b>	<b>82</b>	<b>0</b>	<b>52</b>	<b>171</b>
		Condition (%)	22%	48%	0%	30%	100%

<b>19</b>	<b>Marsabit</b>							
		Bridges	Arch					
			Bailey					
			Girder	1				1
			Truss					
			Tunnel					
			<b>Total for Bridge</b>	<b>1</b>				<b>1</b>
			Condition (%)	100%	0%	0%	0%	100%
		Pipe Culverts	<600	51	141		29	221
			600m-900					
			>900	51	141		29	221
			<b>Total for Pipes</b>		<b>2</b>			<b>2</b>
			Condition (%)	0%	100%	0%	0%	100%
		Arch Culverts						
		Box Culverts						
		Armco Culverts						
		Drifts		43	128		6	177
		Others						
		<b>Total</b>		<b>43</b>	<b>128</b>	<b>0</b>	<b>6</b>	<b>177</b>
		Condition (%)		24%	72%	0%	3%	100%

<b>20</b>	<b>Samburu</b>							
		Bridges	Arch					
			Bailey					
			Girder	1	8			9
			Truss					
			Tunnel					
			<b>Total for Bridge</b>	<b>1</b>	<b>8</b>			<b>9</b>
			Condition (%)	11%	89%	0%	0%	100%
		Pipe Culverts	<600	2	7		5	14
			600m-900	58	352		25	435

COUNTY	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
		>900		8			8
		<b>Total for Pipes</b>	<b>60</b>	<b>367</b>		<b>30</b>	<b>457</b>
		Condition (%)	13%	80%	0%	7%	100%
	Arch Culverts						
	Box Culverts		2	3			5
	Armco Culverts			1		1	2
	Drifts		32	50		19	101
	Others						
	<b>Total</b>		<b>34</b>	<b>54</b>	<b>0</b>	<b>20</b>	<b>108</b>
	Condition (%)		31%	50%	0%	19%	100%

<b>21</b>	<b>Turkana</b>							
	Bridges	Arch						
		Bailey						
		Girder		4				4
		Truss						
		Tunnel						
		<b>Total for Bridges</b>		<b>4</b>				<b>4</b>
		Condition (%)	0%	100%	0%	0%		100%
	Pipe Culverts	<600	6	22		4		32
		600m-900	14	368		10		392
		>900	1	17				18
		<b>Total for Pipes</b>	<b>21</b>	<b>407</b>		<b>14</b>		<b>442</b>
		Condition (%)	5%	92%	0%	3%		100%
	Arch Culverts			10				10
	Box Culverts		4	192				196
	Armco Culverts		2	5				7
	Drifts		19	62		11		92
	Others							
	<b>Total</b>		<b>25</b>	<b>269</b>	<b>0</b>	<b>11</b>		<b>305</b>
	Condition (%)		8%	88%	0%	4%		100%



## **TABLE 5C: SUMMARY OF DRAINAGE STRUCTURES ON NARROW ROADS**

**TABLE - 5C: SUMMARY OF DRAINAGE STRUCTURES ON NARROW ROADS (OVERALL)**

COUNTIES	Drainage Structure	Structure Type	Quantity & Condition				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
Overall							
	Bridges	Arch	4	0	0	0	4
		Bailey	35	17	6	0	58
		Girder	361	107	167	0	635
		Truss	41	6	3	0	50
		Tunnel	0	0	0	0	4
	<b>Bridge Total</b>	<b>Total for Bridges</b>	<b>441</b>	<b>130</b>	<b>176</b>	<b>0</b>	<b>747</b>
		Condition (%)	59%	17%	24%	0%	100%
		Pipe Culverts					
		<600	351	34	11	0	396
		600-900	7,753	958	642	0	9,353
		>900	62	2	2	0	66
		<b>Total for pipes</b>	<b>8,166</b>	<b>994</b>	<b>655</b>	<b>0</b>	<b>9,815</b>
		Condition (%)	83%	10%	7%	0%	100%
		Arch Culverts	0	0	3	0	3
		Box Culverts	291	24	6	0	321
		Armco Culverts	40	10	7	0	57
		Drifts	45	32	13	0	90
	Others	0	0	6	0	6	
	<b>Total</b>	<b>376</b>	<b>66</b>	<b>35</b>	<b>0</b>	<b>477</b>	
	Condition (%)	79%	14%	7%	0%	100%	

**TABLE 5D: SUMMARY OF DRAINAGE STRUCTURES ON  
NARROW ROADS PER COUNTY**

**TABLE - 5D: SUMMARY OF DRAINAGE STRUCTURES ON NARROW ROADS (PER COUNTY)**

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
<b>1</b>	<b>Bomet</b>						
	Bridges	Arch					
		Bailey	6	3			9
		Girder	15	17	14		46
		Truss	5	2	3		10
		Tunnel					
		<b>Total for Bridge</b>	<b>26</b>	<b>22</b>	<b>17</b>		<b>65</b>
		Condition (%)	40%	34%	26%	0%	100%
	Pipe Culverts	<600	8	8	6		22
		600m-900	339	83	130		552
		>900	10				10
		<b>Total for Pipes</b>	<b>357</b>	<b>91</b>	<b>136</b>		<b>584</b>
		Condition (%)	61%	16%	23%	0%	100%
	Arch Culverts						
	Box Culverts		2	1	1		4
	Armco Culverts		4	2			6
	Drifts			1	1		2
	Others						
	<b>Total</b>		<b>6</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>12</b>
	Condition (%)		50%	33%	17%	0%	100%

<b>2</b>	<b>Kericho</b>						
	Bridges	Arch	3				3
		Bailey					
		Girder	50	17	7		74
		Truss					
		Tunnel	4				4
		<b>Total for Bridge</b>	<b>57</b>	<b>17</b>	<b>7</b>		<b>81</b>
		Condition (%)	70%	21%	9%	0%	100%
	Pipe Culverts	<600	275	19	4		298
		600m-900	1270	196	61		1527
		>900	3	1			4
		<b>Total for Pipes</b>	<b>1548</b>	<b>216</b>	<b>65</b>		<b>1,829</b>
		Condition (%)	85%	12%	4%	0%	100%
	Arch Culverts						
	Box Culverts		59	7	2		68
	Armco Culverts		1		7		8
	Drifts		2				2
	Others				6		6
	<b>Total</b>		<b>62</b>	<b>7</b>	<b>15</b>	<b>0</b>	<b>84</b>
	Condition (%)		74%	8%	18%	0%	100%

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
<b>3</b>	<b>Nyamira</b>						
		Bridges					
		Arch					
		Bailey					
		Girder	16	8	12		36
		Truss	3	1			4
		Tunnel					
		<b>Total for Bridge</b>	<b>19</b>	<b>9</b>	<b>12</b>		<b>40</b>
		Condition (%)	48%	23%	30%	0%	100%
		Pipe Culverts					
		<600	4				4
		600m-900	153	16	12		181
		>900					
		<b>Total for Pipes</b>	<b>157</b>	<b>16</b>	<b>12</b>		<b>185</b>
		Condition (%)	85%	9%	6%	0%	100%
		Arch Culverts					
		Box Culverts	14	2			16
		Armco Culverts		1			1
		Drifts					
		Others					
		<b>Total</b>	<b>14</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>17</b>
		Condition (%)	82%	18%	0%	0%	100%

<b>4</b>	<b>Kisii</b>						
		Bridges					
		Arch					
		Bailey	1				1
		Girder	15	2	8		25
		Truss	2				2
		Tunnel					
		<b>Total for Bridge</b>	<b>18</b>	<b>2</b>	<b>8</b>		<b>28</b>
		Condition (%)	64%	7%	29%	0%	100%
		Pipe Culverts					
		<600	1				1
		600m-900	320	42	20		382
		>900	4				4
		<b>Total for Pipes</b>	<b>325</b>	<b>42</b>	<b>20</b>		<b>387</b>
		Condition (%)	84%	11%	5%	0%	100%
		Arch Culverts					
		Box Culverts	12				12
		Armco Culverts	8	2			10
		Drifts					
		Others					
		<b>Total</b>	<b>20</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>22</b>
		Condition (%)	91%	9%	0%	0%	100%

<b>5</b>	<b>Migori</b>						
		Bridges	Arch				

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
		Bailey	2	1			3
		Girder	25	1	1		27
		Truss		1			1
		Tunnel					
		<b>Total for Bridge</b>	<b>27</b>	<b>3</b>	<b>1</b>		<b>31</b>
		Condition (%)	87%	10%	3%	0%	100%
	Pipe Culverts	<600	3				3
		600m-900	590	65	45		700
		>900	5				5
		<b>Total for Pipes</b>	<b>598</b>	<b>65</b>	<b>45</b>		<b>708</b>
		Condition (%)	84%	9%	6%	0%	100%
	Arch Culverts						
	Box Culverts		36	2	1		39
	Armco Culverts		6				6
	Drifts		1		3		4
	Others						
	<b>Total</b>		<b>43</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>49</b>
	Condition (%)		88%	4%	8%	0%	100%

<b>6</b>	<b>Homa Bay</b>						
		Bridges	Arch				
			Bailey	3			3
			Girder	15	4	2	21
			Truss	2	2		4
			Tunnel				
			<b>Total for Bridge</b>	<b>20</b>	<b>6</b>	<b>2</b>	<b>28</b>
			Condition (%)	71%	21%	7%	100%
	Pipe Culverts	<600	4		1		5
		600m-900	406	51	23		480
		>900	4				4
		<b>Total for Pipes</b>	<b>414</b>	<b>51</b>	<b>24</b>		<b>489</b>
		Condition (%)	85%	10%	5%	0%	100%
	Arch Culverts				300%		300%
	Box Culverts		15	1			16
	Armco Culverts						
	Drifts		1	1	1		3
	Others						
	<b>Total</b>		<b>16</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>22</b>
	Condition (%)		73%	9%	18%	0%	100%

<b>7</b>	<b>Kisumu</b>						
		Bridges	Arch				
			Bailey	4			4
			Girder	13	4		17

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
		Truss	5				5
		Tunnel					
		<b>Total for Bridge</b>	<b>22</b>	<b>4</b>			<b>26</b>
		Condition (%)	85%	15%	0%	0%	100%
	Pipe Culverts	<600	5				5
		600m-900	622	51	22		695
		>900	11		1		12
		<b>Total for Pipes</b>	<b>638</b>	<b>51</b>	<b>23</b>		<b>712</b>
		Condition (%)	90%	7%	3%	0%	100%
	Arch Culverts						
	Box Culverts		34	3	2		39
	Armco Culverts		5				5
	Drifts		2		1		3
	Others						
	<b>Total</b>		<b>41</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>47</b>
	Condition (%)		87%	6%	6%	0%	100%

8	Siaya						
	Bridges	Arch					
		Bailey					
		Girder	6	1	4		11
		Truss	2				2
		Tunnel					
		<b>Total for Bridge</b>	<b>8</b>	<b>1</b>	<b>4</b>		<b>13</b>
		Condition (%)	62%	8%	31%	0%	100%
	Pipe Culverts	<600	20	2			22
		600m-900	664	46	28		738
		>900	2		1		3
		<b>Total for Pipes</b>	<b>686</b>	<b>48</b>	<b>29</b>		<b>763</b>
		Condition (%)	90%	6%	4%	0%	100%
	Arch Culverts						
	Box Culverts		4				4
	Armco Culverts		2				2
	Drifts						
	Others						
	<b>Total</b>		<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>
	Condition (%)		100%	0%	0%	0%	100%

9	Busia						
	Bridges	Arch					
		Bailey	14	4	5		23
		Girder	10	4			14
		Truss					
		Tunnel					

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
		<b>Total for Bridge</b>	<b>24</b>	<b>8</b>	<b>5</b>		<b>37</b>
		Condition (%)	65%	22%	14%	0%	100%
	Pipe Culverts	<600	13				13
		600m-900	636	73	47		756
		>900	1				1
		<b>Total for Pipes</b>	<b>650</b>	<b>73</b>	<b>47</b>		<b>770</b>
		Condition (%)	84%	9%	6%	0%	100%
	Arch Culverts						
	Box Culverts		21	4			25
	Armco Culverts						
	Drifts		1				1
	Others						
	<b>Total</b>		<b>22</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>26</b>
	Condition (%)		85%	15%	0%	0%	100%

<b>10</b>	<b>Bungoma</b>						
	Bridges	Arch					
		Bailey	2	3			5
		Girder	85	27	79		191
		Truss	8				8
		Tunnel					
		<b>Total for Bridge</b>	<b>95</b>	<b>30</b>	<b>79</b>		<b>204</b>
		Condition (%)	47%	15%	39%	0%	100%
	Pipe Culverts	<600	3	1			4
		600m-900	1018	151	172		1341
		>900	1				1
		<b>Total for Pipes</b>	<b>1022</b>	<b>152</b>	<b>172</b>		<b>1,346</b>
		Condition (%)	76%	11%	13%	0%	100%
	Arch Culverts						
	Box Culverts		27	2			29
	Armco Culverts			3			3
	Drifts						
	Others						
	<b>Total</b>		<b>27</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>32</b>
	Condition (%)		84%	16%	0%	0%	100%

<b>11</b>	<b>Kakamega</b>						
	Bridges	Arch					
		Bailey		2	1		3
		Girder	38	3	14		55
		Truss	5				5
		Tunnel					
		<b>Total for Bridge</b>	<b>43</b>	<b>5</b>	<b>15</b>		<b>63</b>
		Condition (%)	68%	8%	24%	0%	100%



COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
	Pipe Culverts	<600	4	1			5
		600m-900	611	65	25		701
		>900	8	1			9
		<b>Total for Pipes</b>	<b>623</b>	<b>67</b>	<b>25</b>		<b>715</b>
		Condition (%)	87%	9%	3%	0%	100%
	Arch Culverts						
	Box Culverts		26				26
	Armco Culverts		5	2			7
	Drifts						
	Others						
	<b>Total</b>		<b>31</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>33</b>
	Condition (%)		94%	6%	0%	0%	100%

<b>12</b>	<b>Vihiga</b>						
	Bridges	Arch					
		Bailey					
		Girder	20	6	5		31
		Truss					
		Tunnel					
		<b>Total for Bridge</b>	<b>20</b>	<b>6</b>	<b>5</b>		<b>31</b>
		Condition (%)	65%	19%	16%	0%	100%
	Pipe Culverts	<600	5	2			7
		600m-900	144	12	7		163
		>900	5				5
		<b>Total for Pipes</b>	<b>154</b>	<b>14</b>	<b>7</b>		<b>175</b>
		Condition (%)	88%	8%	4%	0%	100%
	Arch Culverts						
	Box Culverts		21	1			22
	Armco Culverts						
	Drifts						
	Others						
	<b>Total</b>		<b>21</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>22</b>
	Condition (%)		95%	5%	0%	0%	100%

<b>13</b>	<b>Nandi</b>						
	Bridges	Arch					
		Bailey					
		Girder	16	4	5		25
		Truss	2				2
		Tunnel					
		<b>Total for Bridge</b>	<b>18</b>	<b>4</b>	<b>5</b>		<b>27</b>
		Condition (%)	67%	15%	19%	0%	100%
	Pipe Culverts	<600	2	1			3

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
		600m-900	170	24	6		200
		>900	1				1
		<b>Total for Pipes</b>	<b>173</b>	<b>25</b>	<b>6</b>		<b>204</b>
		Condition (%)	85%	12%	3%	0%	100%
		Arch Culverts					
		Box Culverts	3				3
		Armco Culverts					
		Drifts		1			1
		Others					
		<b>Total</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>4</b>
		Condition (%)	75%	25%	0%	0%	100%

14	Uasin Gishu							
		Bridges	Arch					
			Bailey		4			4
			Girder	18	5	5		28
			Truss					
			Tunnel					
			<b>Total for Bridge</b>	<b>18</b>	<b>9</b>	<b>5</b>		<b>32</b>
			Condition (%)	56%	28%	16%	0%	100%
		Pipe Culverts	<600	1				1
			600m-900	226	13	11		250
			>900					
			<b>Total for Pipes</b>	<b>227</b>	<b>13</b>	<b>11</b>		<b>251</b>
			Condition (%)	90%	5%	4%	0%	100%
		Arch Culverts						
		Box Culverts		4	1			5
		Armco Culverts		2				2
		Drifts						
		Others						
		<b>Total</b>		<b>6</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>7</b>
		Condition (%)		86%	14%	0%	0%	100%

15	Trans Nzoia							
		Bridges	Arch					
			Bailey	1				1
			Girder	3	3	5		11
			Truss					
			Tunnel					
			<b>Total for Bridge</b>	<b>4</b>	<b>3</b>	<b>5</b>		<b>12</b>
			Condition (%)	33%	25%	42%	0%	100%
		Pipe Culverts	<600					
			600m-900	146	20	5		171
			>900	2				2

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
		<b>Total for Pipes</b>	<b>148</b>	<b>20</b>	<b>5</b>		<b>173</b>
		Condition (%)	86%	12%	3%	0%	100%
		Arch Culverts					
		Box Culverts	3				3
		Armco Culverts					
		Drifts					
		Others					
		<b>Total</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
		Condition (%)	100%	0%	0%	0%	100%

<b>16</b>	<b>Elgeyo-Marakwet</b>						
		Bridges	Arch				
			Bailey				
			Girder	7			7
			Truss				
			Tunnel				
			<b>Total for Bridge</b>	<b>7</b>			<b>7</b>
			Condition (%)	100%	0%	0%	100%
		Pipe Culverts	<600	1			1
			600m-900	60	8	4	72
			>900				
			<b>Total for Pipes</b>	<b>61</b>	<b>8</b>	<b>4</b>	<b>73</b>
			Condition (%)	84%	11%	5%	100%
		Arch Culverts					
		Box Culverts		1			1
		Armco Culverts					
		Drifts					
		Others					
		<b>Total</b>		<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
		Condition (%)		100%	0%	0%	100%

<b>17</b>	<b>Baringo</b>						
		Bridges	Arch	1			1
			Bailey				
			Girder	4		6	10
			Truss	3			3
			Tunnel				
			<b>Total for Bridge</b>	<b>8</b>		<b>6</b>	<b>14</b>
			Condition (%)	57%	0%	43%	100%
		Pipe Culverts	<600	2			2
			600m-900	226	38	19	283
			>900				
			<b>Total for Pipes</b>	<b>228</b>	<b>38</b>	<b>19</b>	<b>285</b>
			Condition (%)	80%	13%	7%	100%

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
		Arch Culverts					
		Box Culverts	3				3
		Armco Culverts	4				4
		Drifts	9	2	2		13
		Others					
		<b>Total</b>	<b>16</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>20</b>
		Condition (%)	80%	10%	10%	0%	100%

18	West Pokot						
		Bridges	Arch				
			Bailey	2			2
			Girder	5	1		6
			Truss				
			Tunnel				
			<b>Total for Bridge</b>	<b>7</b>	<b>1</b>		<b>8</b>
			Condition (%)	88%	13%	0%	100%
		Pipe Culverts	<600				
			600m-900	54	2	3	59
			>900	3			3
			<b>Total for Pipes</b>	<b>57</b>	<b>2</b>	<b>3</b>	<b>62</b>
			Condition (%)	92%	3%	5%	100%
		Arch Culverts					
		Box Culverts		3			3
		Armco Culverts					
		Drifts		4	3	2	9
		Others					
		<b>Total</b>		<b>7</b>	<b>3</b>	<b>2</b>	<b>12</b>
		Condition (%)		58%	25%	17%	100%

19	Marsabit						
		Bridges	Arch				
			Bailey				
			Girder				
			Truss				
			Tunnel				
			<b>Total for Bridges</b>				
			Condition (%)	0%	0%	0%	0%
		Pipe Culverts	<600				
			600m-900	29			29
			>900				
			<b>Total for Pipes</b>	<b>29</b>			<b>29</b>
			Condition (%)	100%	0%	0%	100%
		Arch Culverts					

COUNTY	Drainage Structure	Structure Type	QUANTITY & CONDITION				Total Quantity & Condition
			Good	Fair	Poor	Under Construction	
	Box Culverts		1				1
	Armco Culverts		3				3
	Drifts		17	22	3		42
	Others						
	<b>Total</b>		<b>21</b>	<b>22</b>	<b>3</b>	<b>0</b>	<b>46</b>
	Condition (%)		46%	48%	7%	0%	100%

20	Samburu							
	Bridges	Arch						
		Bailey						
		Girder						
		Truss						
		Tunnel						
		<b>Total for Bridges</b>						
		Condition (%)	0%	0%	0%	0%	0%	0%
	Pipe Culverts	<600						
		600m-900	42	2	1			45
		>900	2					2
		<b>Total for Pipes</b>	<b>44</b>	<b>2</b>	<b>1</b>			<b>47</b>
		Condition (%)	94%	4%	2%	0%		100%
	Arch Culverts							
	Box Culverts							
	Armco Culverts							
	Drifts		5	1				6
	Others							
	<b>Total</b>		<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>		<b>6</b>
	Condition (%)		83%	17%	0%	0%		100%

21	Turkana							
	Bridges	Arch						
		Bailey						
		Girder						
		Truss						
		Tunnel						
		<b>Total for Bridges</b>						
		Condition (%)	0%	0%	0%	0%	0%	0%
	Pipe Culverts	<600						
		600m-900	27		1			28
		>900						
		<b>Total for Pipes</b>	<b>27</b>		<b>1</b>			<b>28</b>
		Condition (%)	96%	0%	4%	0%		100%
	Arch Culverts							
	Box Culverts		2					2
	Armco Culverts							



## **APPENDIX 2 : BOOK OF MAPS PER COUNTY**

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### **BOOK OF MAPS**

**(BOUND IN A SEPARATE VOLUME 3)**

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