



District Road Works

VOLUME

1

Planning Manuals

Manual A:

Functional Road Classification System & Route Numbering



ACKNOWLEDGEMENTS

These manuals have been prepared by the Ministry of Works, Housing and Communications, Uganda.

The aim of the manuals is to complement the Ministry's effort in providing guidance and building capacity of Local Governments to enable them handle their mandated roles in planning and management of the road sector development.

This manual is part of a set titled District Road Works. The set consists of 5 Volumes, each volume comprising a series of manuals covering varying aspects under the following headings:

- Volume 1 Planning Manuals
- Volume 2 Contract Management Manuals
- Volume 3 Implementation and Monitoring Manuals
- Volume 4 Technical Manuals
- Volume 5 District Administrative and Operational Guidelines

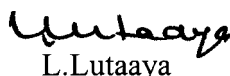
The Manuals describe in detail the organization and techniques for planning, implementation and administration of a district road network. The manuals support Government strategies on sustainable maintenance of district roads; they encourage community participation, promote use of labour based methods and gender balance, ensure protection of the environment, foster work place safety and health in implementation of road works by adopting appropriate contracting practices and support the local construction industry.

They are primarily aimed at Road Engineers, Planners and Managers involved in the planning and management of district road works.

In line with the topics covered in these manuals, related training modules have been designed and are incorporated in the curriculum of the Mount Elgon Labour Based Training Centre.

The manuals are the property of the Ministry of Works, Housing and Communications, but copying and local distribution is not restricted.

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L.Lutaaya

Engineer in Chief / DE

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Functional Road Classification System
and Route Numbering

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Section A1

Functional Road Classification System and Route Numbering

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Functional Road Classification System and Route Numbering

PURPOSE OF A FUNCTIONAL ROAD CLASSIFICATION SYSTEM

Road Classification can be undertaken from a variety of perspectives, the most important of which are:

- Juridical status and administrative responsibility;
- Operational or traffic function;
- Physical structure and condition of road.

In many cases these functions overlap with borderlines cases leading to conflicts among different authorities, thus requiring clear-cut definitions of the country's roads.

The classification of roads into functional classes establishes the road hierarchy according to the importance of each road link in the countrywide road network.

The functional classification of roads should reflect not only the existing situation, but also be based on a long-term view of the distribution of population and the socio-economic activities both in the area served by the roads and the country as a whole.

In Uganda, the road network is split into a number of functional classes. Of particular importance are the three principal functional classes, which include the Trunk Road, District Road and Community Access Road (CARs) networks.

For proper management and administration of the road network, a number of specific Agencies are responsible for each of the functional classes.

For the three principal functional classes mentioned above, the Ministry of Works, Housing and Communications (MoWHC) is responsible for Trunk Roads, District Local Governments (DLGs) are responsible for District Roads and Sub-County (LC3) administrations responsible for CARs.

This division of responsibility enables each concerned Agency to undertake the effective maintenance and development of their respective road networks in accordance with the prevailing policies and objectives of the Government of Uganda (GoU).

PURPOSE OF ROUTE NUMBERING

The purpose of Route Numbering is to guide both road users and responsible Agencies. Routes are generally homogenous and continuous, thus guiding road users to appropriate routes according to journey characteristics including origin, destination and trip length. Route numbers are used to identify specific road links in computerised databases and thereby establish common identifiers for those Agencies responsible for their maintenance and development.

The route numbering system should delineate the functional classification of the road, and at the same time capture the hierarchical division of roads. The numbering system must exhibit the following properties:

- Rational, so that the geographical location of a road determines the number
- Consistent, so that the status of a road in the system also determines the number
- Dynamic, so that changes in status of a road or construction of a new road can be readily incorporated in the system.

The MoWHC has an established system for route numbering on the Trunk Road network.

For District Road Networks, each road link is identified by a four-digit number; the first two digits being those of the district's administrative number, and the second two digits being those assigned to the road link by the DLGs.

Currently, adjacent roads have then been given successive numbers regardless of class. The method has some deficiencies; the route numbers do not provide information on the general direction of the route. Neither are there rules about the spatial order of the route number. The lack of rules has resulted in "district boarder jumps" of numbers. For these reason it can be difficult to find and follow specific routes on the map. Finally, there are no specific rules for adding new route numbers.

DESIGN CLASS AND STANDARDS

Within each of the three principal functional classes, there are a number of design classes, which generally reflect the usage of the road by the public.

Design standards are directed by the road functional class, together with other indicators such as existing and predicted levels of motorised traffic using the road; in other words, the higher the traffic volume, the higher the design class and, therefore, the design standard of the road.

Design class, therefore, serves as a guide for the selection of appropriate geometric design standards for road construction and subsequent levels of routine and periodic maintenance. Design class should also serve as a guide to reserve adequate right of way taking into account the possible need for future improvement of the existing road to a higher design class/standard.

The MoWHC has an established functional road classification system together with design classes and standards for all those road links comprising the Trunk Road network.

Since 1997, the MoWHC has taken responsibility for policy, functional classification and establishment of design classes and standards for District Road networks. The MoWHC has also assisted the DLGs with development of design standards appropriate for meeting the needs of various design classes of district roads, which take into account many factors including road side drainage configurations typical to and often unique in Uganda.

This assistance has resulted in the publication of two specific references, for use by the DLGs, and which comprise the fourth volume of this five-volume set of District Road Works Manuals:

- Standard Design Manual - Volume 4, Manual A, and
- Technical Manual - Volume 4, Manual B.

FUNCTIONAL ROAD CLASSIFICATION SYSTEM FOR DISTRICT ROAD NETWORKS

District roads, including their connecting CARs, are very important as they provide accessibility to a high proportion of the rural population. Even those district road links having low levels of motorised traffic are vital to the welfare and economy of rural populations, particularly for those communities living in the more remote regions.

Because of this, the following themes regarding district road networks were considered during development of the functional classification system:

- Development and maintenance of district road networks should not be based solely on motorised traffic volumes using the roads.
- Basic accessibility provided by the roads and the pedestrian and cyclist movements on them (also considered traffic) should be taken into account.
- Functional road classification should be based not only on present motorised traffic volumes but also take into account the function of the road as an accessibility provider for the districts activity centres.
- For reasons of safety, district road design class and standards should take into account not only motorised vehicular traffic but also human traffic.
- Facilities for the safe movement of pedestrians, cyclists, and other two-wheeled motorised and non-motorised vehicles should be provided.
- The potential for future traffic growth should also be reflected in the design class and standards.
- District roads together with connecting CARs play a major role in providing accessibility and opportunities to the majority of the population and adequate provision should be made to maintain these roads in good condition.

Definitions of the functional classification system for the three Classes of District Roads follow:

DISTRICT CLASS I ROADS

District Class I roads serve national interests in that they satisfy criteria established for secondary and/or tertiary road systems of the MoWHC's Trunk Road network. District Class I roads will be candidates for eventual upgrading to the Trunk Road network and become the responsibility of the MoWHC for maintenance and further development. District Class I roads, to qualify for upgrading to MoWHC jurisdiction, need to be engineered and constructed to MoWHC standards.

DISTRICT CLASS II ROADS

District Class II roads provide the basic internal transport needs of the district. District Class II roads connect to the MoWHC secondary or tertiary road systems, interconnect the district capital and county administrative centres, and provide direct access for district population centres to district health, educational, marketing and administrative facilities. Such roads generally have a gravel surface and carry, on average, twenty (20) or more motorised vehicles per day.

DISTRICT CLASS III ROADS

District Class III roads (including cul-de-sacs), are typically low motorised traffic volume roads extending into the districts lightly populated peripheral regions. District Class III roads may, at times, serve as connectors to and/or between district Class II roads, but generally do not provide direct routings to major public activity centres. Such roads generally have an earth/gravel surface and carry, on average, less than twenty (20) motorised vehicles per day.

OTHER FUNCTIONAL CLASSES OF ROADS

COMMUNITY ACCESS ROADS

In Uganda, the Community Access Roads (CARs) network comprises an extensive system of low motorised traffic volume, usually dry weather only earth roads, serving primarily pedestrians, bicycles and animal drawn carts. Neither an inventory/condition survey detailing the actual extent and condition of this network, nor any clear definition of design class and appropriate design standards exist at present.

During implementation by district local government staff of their annual district road inventory and condition surveys (ADRICS), local authorities at sub-county level are provided the opportunity to identify those CARs considered most important for the survival and continued development of their communities. This process will, over time, enable identification of the most important CARs and result in the development of a simple listing or inventory which can be used for selection and prioritisation of improvement works. For complete details of the ADRICS procedure, refer to Volume No 1, Manual B.

URBAN ROADS

Urban Road networks in Uganda consist of all those roads within the boundaries of Urban Authorities as defined by the Urbanised Area Map Gazette and formally adopted by the Ministry of Local Government. These same Urban Authorities are responsible for the maintenance and development of all Urban Roads within their jurisdictions.

Within the general classification of Urban Roads, there exist five design classes including:

- **Urban Class I** - roads providing continuity for the MoWHC's primary Trunk Road network through the boundaries of Urban Authorities who are responsible for providing and maintaining paved, all weather service.
- **Urban Class II** - roads providing continuity for the MoWHC's secondary and/or tertiary Trunk Road network, including District Class I routes, through the boundaries of Urban Authorities who are responsible for providing and maintaining such routes which may be paved or gravelled, and allow all weather service.
- **Urban Class III** - roads providing continuity for District Class II routes through the boundaries of Urban Authorities who are responsible for providing and maintaining such routes which may be paved or gravelled, and allow all weather service.
- **Urban Class IV** - roads within the central urban community serving governmental administrative facilities and local commerce but not part of the MoWHC or District networks. Urban Authorities are responsible for providing and maintaining such routes which may be paved or gravelled, and allow all weather service.
- **Urban Class V** - roads serving residential and agricultural areas essentially outside the central urban community and which may be paved or gravelled.

SUMMARY

The Functional Road Classification System including Route Numbering provides the foundation for planning and financing the road sector maintenance and development programme by clearly defining the role of each road link in the country-wide network together with its jurisdiction.

The Annex to this Manual, which is updated annually by the MoWHC, provides listings of all road links included in the functional road classification system together with their classes and route numbers for -

- the Trunk Road network, under responsibility of the MoWHC, and
- the District Road Networks, under responsibility of the District Local Governments.

Annex 1

Guidelines for the Classification of District and Urban Roads

Guidelines for the Classification of District and Urban Roads

The term “classification of road” refers to the placing of roads in groups because of similarities in the functions or character of service they supply. This is referred to as the functional classification of roads. Roads can also be classified according to similarities in the road condition (operational classification), technical standards (technical classification) and level of managing authority (administrative classification).

The purpose of classifying roads into functional categories is to give an indication of the importance of the road, thereby providing a basis for establishing policies that will guide the management of roads. These policies include funding levels for maintenance, standards for planning, design and operation, and access control.

Road classification is usually based on the traffic carrying function of the road. Roads have basically two roles, namely to provide mobility and to provide access. Mobility is the characteristic of a road according to which traffic is allowed to travel at high speed, safely and mainly uninterrupted from one point to the next. Access means providing access to places along the road. The more the access-giving role is pronounced, the less the mobility of the road becomes, and vice versa.

The main criterion according to which roads are classified functionally is the ORIGIN AND DESTINATION OF A ROAD. In Uganda it has also been the main criterion and it is suggested that it remains the way to classify roads.

The table below gives a guideline according to which the roads network in Uganda should be classified. The table consists of 4 columns. The first two columns contain possible origins and destinations, the third gives the proposed functional classification, and the last column gives an indication of what would be an appropriate road surface.

CONNECTING		ROAD CLASSIFICATION (FUNCTIONAL)	ROAD SURFACE (PART OF OPERATIONAL CLASSIFICATION)
From	To		
Communities (Small)	Communities (Small)	Community Access Roads	Natural In-Situ Material
Capital (District)	Admin. Facilities (County)	District Class II Road	Gravel
Community Centres (District)	Admin. Facility (District)	District Class II Road	Gravel
Community Centres (District)	Education Facility (Dist.)	District Class II Road	Gravel
Community Centres (District)	Health Facility (District)	District Class II Road	Gravel
Secondary Trunk Road	Tertiary Trunk Road	District Class II Road	Gravel
Lightly Populated Regions	District Class II Road	District Class III Road	Gravel
Radial District Arterial Road	Radial District Arterial Road	District Class III Road	Gravel
Same as Secondary and Tertiary Roads	Same as Secondary and Tertiary Roads	District Class I Road	All Weather paved or gravel
Airport (International)	Airport (International)	Primary Trunk Road	All Weather paved
Cities	Airport (International)	Primary Trunk Road	All Weather paved
Capital (District)	Capital (District)	Primary Trunk Road	All Weather paved
Agricultural producers (Inland)	Coastal markets	Primary Trunk Road	All Weather paved
Commerce (Primary Centres)	Commerce (Primary Centres)	Primary Trunk Road	All Weather paved

CONNECTING		ROAD CLASSIFICATION (FUNCTIONAL)	ROAD SURFACE (PART OF OPERATIONAL CLASSIFICATION)
From	To		
Agricultural producers (Inland)	Factories	Primary Trunk Road	All Weather paved
Primary Trunk Road	Agricultural (Production region major)	Secondary Trunk road	All Weather paved or gravel
Primary Trunk Road	Airport International	Secondary Trunk road	All Weather paved or gravel
Primary Trunk Road	Airports (Domestic)	Secondary Trunk road	All Weather paved or gravel
Primary Trunk Road	Capital (District)	Secondary Trunk road	All Weather paved or gravel
Primary Trunk Road	Commercial and Industrial complexes	Secondary Trunk road	All Weather paved or gravel
Primary Trunk Road	Community centres in excess of 5000 persons	Secondary Trunk road	All Weather paved or gravel
Primary Trunk Road	Councils (Town)	Secondary Trunk road	All Weather paved or gravel
District	District	Secondary Trunk road	All Weather paved or gravel
Primary Trunk Road	Marine Terminals	Secondary Trunk road	All Weather paved or gravel
Primary Trunk Road	Municipalities	Secondary Trunk road	All Weather paved or gravel
Primary Trunk Road	National parks (Major)	Secondary Trunk road	All Weather paved or gravel
Administration Centres (District)	Community Centres with 1000 to 5000 persons	Tertiary Trunk Road	All weather paved or gravel
District	District	Tertiary Trunk Road	All weather paved or gravel
Agricultural areas (High Production)	Secondary Trunk Road	Tertiary Trunk Road	All weather paved or gravel
Agricultural areas (High Production)	Secondary Trunk Road	Tertiary Trunk Road	All weather paved or gravel
Fishing Industry (Major Commercial)	Secondary Trunk Road	Tertiary Trunk Road	All weather paved or gravel
Secondary Trunk Road	Secondary Trunk Road	Tertiary Trunk Road	All weather paved or gravel
Security areas (National)	Secondary Trunk Road	Tertiary Trunk Road	All weather paved or gravel
Primary Trunk Road	Primary Trunk Road	Urban Class 1 Road	All weather paved
Secondary Trunk Road	Secondary Trunk Road	Urban Class 2 Road	All weather paved or gravel
District Class II road	District Class II Road	Urban Class 3 Road	All weather paved or gravel
Urban (Facilities within the area)	Urban Area (Facilities within the area)	Urban Class 4 Road	All weather paved or gravel
Urban Area (Communities outside Central Urban Area)	Urban area (Communities outside Central Urban Area)	Urban Class 5 Road	All weather paved or gravel

Annex 2

District Code and Class

	District and Code	Region	Length of network				Remarks
			Class I	Class II	Class III	Community Road	
04	Adjumani	N					
02	Apac	N					
03	Arua	N					
09	Gulu	N					
53	Pader	N					
22	Kitgum	N					
23	Kotido	N					
26	Lira	N					
32	Moroto	N					
33	Moyo	N					
38	Nebbi	N					
56	Yumbe	N					
07	Bugiri	E					
08	Busia	E					
11	Iganga	E					
12	Jinja	E					
16	Kamuli	E					
17	Kapchorwa	E					
25	Katakwi	E					
24	Kumi	E					
30	Mbale	E					
40	Pallisa	E					
44	Soroti	E					
45	Tororo	E					
54	Sironko	E					
51	Mayuge	E					
46	Kaberanaido	E					
52	Nakapiripirit	E					
15	Kalangala	C					
01	KAMPALA	C					
20	Kiboga	C					
27	Luwero	C					
28	Masaka	C					
34	Mpigi	C					
35	Mubende	C					
36	Mukono	C					
37	Nakasongola	C					
41	Rakai	C					
43	Sembabule	C					
55	Wakiso	C					
49	Kayunga	C					
05	Bundibugyo	W					
06	Bushenyi	(S)W					
10	Hoima	W					
13	Kabale	(S)W					
14	Kabarole	W					
18	Kasese	W					
19	Kibaale	W					
21	Kisoro	(S)W					
29	Masindi	W					
31	Mbarara	(S)W					
39	Ntungamo	(S)W					
42	Rukungiri	(S)W					
50	Kyenjojo	W					
47	Kamwenge	W					
48	Kanungu	(S)W					

