

Nairobi Roads Memo

Abstract

Over the past year the Spatial Information Design Lab has been working with the Earth Institute to create a GIS database of Nairobi, Kenya. This database is groundbreaking for those trying to make informed decisions about Nairobi's future development. While the city of Nairobi already has some GIS databases, these databases are sometimes difficult for urban planners, policy analysts, and community stakeholders to obtain. This project set out to create a freely available dataset that will allow those interested in Nairobi's future to use GIS to make informed decisions. Obtaining this type of data in many developing countries is extremely difficult and its provision in Nairobi will likely have an effect on planning and data policies within the city itself.

The Nairobi Roads file was created by manually digitizing a map which was prepared jointly by the Japan International Cooperation Agency (JICA) and the Government of the Republic of Kenya under the Japanese Government Technical Cooperation Program. The map was published and printed by survey of KENYA 1000 in March 2005 and is copyright protected by the Government of Kenya. The creation of this basemap took place over the course of several months in 2003: aerial photography was taken in February 2003 at a scale of 1:15,000; photogrammetric work was completed in August 2003; field identification was completed in November 2003. The roads file was created with the intention of providing a freely accessible, generalized representation of Nairobi's transportation network.

The Process

The creation of the roads shapefile involved the digitization of the original JICA map. First, lines representing the various road types denoted on the original map were drawn and assigned a road type category. Depending on the amount of information provided by the original map, an official name was added to the attribute table. The width of the road was then measured in meters using the ArcGIS measuring tool. Lastly, the number of obstacles (if any) was identified. If the road appeared clear, the number of obstacles was marked as zero in the attribute table. If there appeared to be a building obstructing the road, the number of obstacles was noted in the attribute table. The building type was marked as temporary, semi-permanent, or permanent, based on the JICA map legend.

Explanation of Road Type Categories

Based on JICA map legend:

- 1 – Main Road
- 2 – Bitumen (Minor Road)
- 3 – Earth (Dirt Road)
- 4 – Other Tracks and Foot Paths*
- 5 – Tracks (Main Track)*

*Foot Path and Main Track notes:

- The base maps are unclear about whether Main Roads and Foot Paths/Main Tracks actually connect—the line segments do not appear to extend to the center of the Main Roads, many of which are limited-access or freeways. Aerial imagery was frequently inconclusive in clarifying the issue. To address this confusion, Foot Paths/Main Tracks have been drawn to the edges of Main Roads. A very short extra segment connects them with the Main Road, as it seems logical that they do in fact connect. In the event that some or all of these intersections do not connect, the short segments can be removed without having to retrace the entire segment.
- A similar situation presents itself with train tracks. Many Foot Paths/Main Tracks do not cross tracks, but many also appear to. To account for this, every time a Foot Path/Main Track crosses rails, it is broken into three segments: one on either side, and one over the tracks themselves. These short segments can also be deleted to break the links.
- Foot bridges are coded as Main Tracks.