Journal of Alternative Perspectives in the Social Sciences(2013) Volume 5 No3, 477-494

AN EVALUATION OF TRANSPORT INFRASTRUCTURE IN LAGOS STATE, NIGERIA

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Abstract:

The need to sustain the growth and development of human settlement and their economies, among user things, makes it partly imperative for the transport sector to be very responsive to different forces that affect transport planning, operations and management. Among these forces are the ownership and control structure of transport infrastructure and services, level of investment in various transport modes (air, maritime, rail, inland water and road), degree of inter-modal coordination, rate of response to transport technological changes, especially in respect of international transport, extent of obsolescence or modernization of the transport system, ability to adapt to changing transport supply – demand pattern and the state of the economy.

Keywords: *Infrastructure; evaluation; transport; economy; Lagos; Nigeria*

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1. Introduction

There is hardly any human society or human settlement system that can function efficiently and effectively without adequate, reliable, safe and affordable transport systems. The most fundamental reason for this being the catalytic effect of transport development on socio-economic growth and development. Transport can also play a significant role in territories as well as in promoting regional cooperation (through the flow of people and goods along the import – export corridors of neighbouring countries. Precisely, transport development is central in the developmental process for the economy and society to grow healthily. This is because transport influences and it is influenced by other sectors that make up, not only the total urban system (Stopher and Meyburg, 1975; NISER, 2000), but the entire human settlements system.

Undoubtedly, stakeholders in both the private and public sectors are involved in varying degrees in the provision and running of transport infrastructure and services (such as shipping services, airports, warehouses, rail track, toll gaps and so on. However, the declining capability and performance of the state in providing and maintaining transport services and infrastructure that meet stakeholders needs, especially those that are public goods and traditionally under its domain (such as roads, seaports, airports, railways and so on) have thrown up a lot of questions on what the scope and role of the state in transport development should really be. In recent years, many countries have introduced transport policy reforms, which seek to reduce government control and involvement in direct transport infrastructure and service provision, revise unrealistic tariff structures, close uneconomic transport routes, and strengthen institutional performance among other things (Button, 1982; Filani 1988; Haggie, 1991; Atubi, 2007).

2. Transport Infrastructure in Lagos State

Figure 1 shows a general view of road transport network in Lagos State. From that we observed the following points:

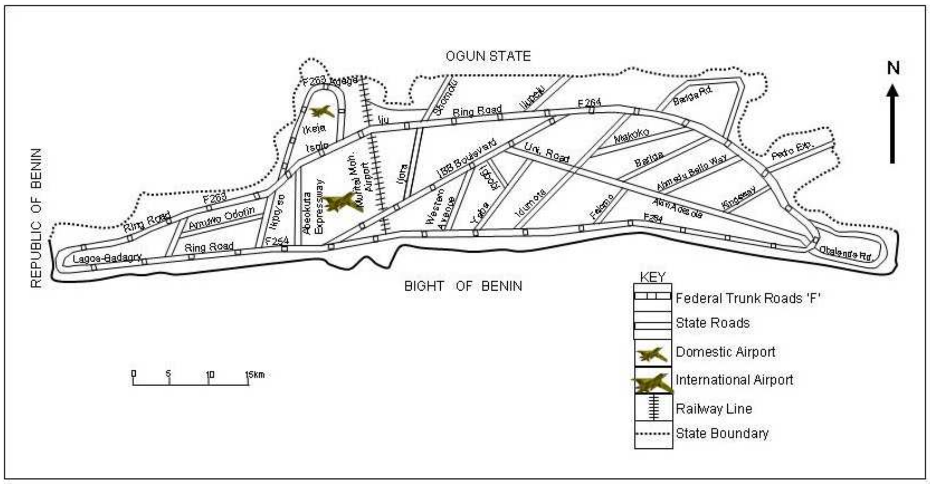

Fig. 1: Map of Lagos State Showing Road Transport Network
Source: Federal Ministry of Works and Housing (2002), Updated by Fieldwork (2004)

Airport:

There are two airports in Lagos State; the Murital Mohammed International airport and the Ikeja airport.

Railway

The Lagos metropolis hourly mass transit services was launched in Lagos on the 26 April, 2001. the launching of the Ijoko – Iddo and subsequently the Ilaw junction – Apapa mass transit trains complements the public oriented plan of the government towards the railway development. The Lagos mass transit has since commenced running with an average number of 7,000 passengers daily, carrying mainly workers, traders, and student. The Ijoko – Iddo mass transit has 12

coaches making 16 trips daily. Another stock running between Agbado and Apapa has since been added to the commuter service arrangement (Lagos Urban Transport Project, 2002).

Waterways

Three agencies are responsible for the provision of the ferry services. These are Inland Water ways Department (IWD), Lagos State Ferry Services Corporation (LSFSC) and Federal Urban Mass Transit Agency (FUMTA). Only five routes are currently being operated by these agencies. These are:

i. Marina - Apapa (Operated by IWD and FUMTA) with three vessels.

ii. Marina - Mile 2 (Operated by LSFSC, FUMTA) with seven vessels.

iii. Ebute Ero - Oyingbo (Operated by LSFSC, FUMTA) with two vessels.

iv. Marina - Ijora (Operated by FUMTA) with one operating vessel.

v. Marina - Tarkwa Bay (Operated by FUMTA) with one operating vessel.

Empirical evidences show that ferry service is grossly inadequate, unreliable and irregular in metropolitan Lagos, despite the abundant water ways (Egobi, 1999; Oni, 2004). With this development and other potential opportunities, private sector participants should be encouraged to develop the ferry route ways. If water - ways are fully developed and properly maintained, they would drastically reduce the chaotic transportation situation in Lagos State.

According to the Lagos State Regional Plan, (2005), travel by non-bus public transport (rail and water transport) has declined to less than 1.0% in Lagos despite their considerable potential. Water transport has a potential to

become an attractive modes of transport for certain links (e.g. the short distance between Lagos Island terminal and Apapa - Warf) and for serving especially low-income communities suh as in Makoko, and Ajegunle.

Road Transport: General Overview

Road transport forms the most important means of transport throughout Lagos State. There are various types of road network, which extend to different parts of Lagos State. By 2001, the total length of tarred roads was 5,514 kilometres which include: Trunk,. A roads maintained by the Federal Government; Trunk B roads maintained by the State Government and Local roads that are maintained by the Local Governments with aids from the State Government (Lagos Urban Transport Project, 2002).

The primary road network (Federal and State Roads) which link the major population centres cover some 4,921 kilometres. Majority of the primary roads are 3-lane, while some are 2-lane with width of 1.32 metres. In terms of road surface about one third of the roads in Lagos State are made of concrete deck, 43.0% are asphaltic concrete while some 23.2% are bituminous (Lagos Urban Transport Project, 2002).

The metropolitan Lagos network structure runs through the central section of Lagos main land urban area on a North-south axis (Fig. 1). The gradual termination of western avenue at the National Theatre, which directly links Lagos Island through Eko bridge and continues further south to serve the Apapa Wharf area. These roads link several large centres including Lagos Island, Ikeja and Ketu area. The Lagos-Badagry express way serves as a dual double-laned facility and merges at the eastern and with Apapa road at the National Theatre junction. Another major urban Arterial with its North-south comprising of Agege motor road, runs south from Agege to Jibowu area. It links the Herbert Maculey/Murtala Mohammed Corridor running south to Iddo and down to Lagos Island via Carter bridge. The only

planned formal access to the Ikeja area is the Airport road which links Ikorodu road with Agege motor roads.

One important factor which has affected the maintenance of roads in Lagos State is transport co-ordination among the various governments - the Federal, State and Local Governments. Before independence, the Federal Government was responsible for Trunk A roads which link the regional capitals with the national and international centres; the regional governments were charged with the responsibility of maintaining Trunk B roads that link the divisional headquarters with the regional capitals while the local authorities were saddled with the numerous roads that linked the various communities called Trunk C roads.

Since independence, various studies on transport co-ordination in the country had recommended that the states will also relieve the local governments' share of road maintenance (Robinson et al, 1961; Kampsex, 1973)

3. The Nature and Trends of Urban Growth and Expansion of Lagos State

The main urban centres in the state are Badagry, Epe, Ikorodu, Ikeja and Lagos. The urbanization process that has taken place in Lagos State has been of such significance in the State and in Nigeria as a whole that it should receive special attention (Oni, 2004). Although not European in origin, Lagos State represents most spectacularly one of that class of Nigerian cities which growth and development have been significantly shaped by European influences. Starting from a small settlement made up by the Aworis (a sub group of the Yoruba's) first at Ebute-Metta and later (for defense reasons) at Iddo, probably in the early part of the 17th century, the settlement of Lagos existed rather quietly up to the end of the 18th century (People, Population and Settlement of Lagos State, 2003).

Then followed piece meal addition of hinterland areas to ensure political and commercial stability; the subsequent growth in commerce and the development of

communications culminating in the founding of the Lagos Chambers of Commerce in 1897. The construction of the railway started in 1895 and harbour improvement followed (1908 - 1917). The volume of trade has continued to grow over the years.

Subsequently, various public programmes relating to industrial development, swamp reclamation and mosquito campaigns, pipe borne water, transportation facilities, commercial activities and the city's increasing functions as the capital of the federation accelerated the growth of Lagos into the greatest single concentration of skills and disposable income in the country. By 1963, the city (the Municipality of Lagos) made up of such components as Lagos Island, Lagos Mainland, Ikoyi and Victoria Island, (Apapa and other areas had an official population figure of 665,246 (Olukoju, 2003).

However, the geographic city beyond the boundaries of the municipality was much larger. The spectacular road development works since the 1970's (the construction of the Eko Bridge, the reconstruction of Ikorodu Road into a 10 lane dual carriage way, the construction of the Third Mainland Bridge, the Apapa-Oworoshoki Expressway, the Lagos Badagry Expressway, the Abeokuta Expressway, the Victoria Island - Epe road as well as the interconnecting roads that link them into elaborate circumferential route ways and circulation paths have been both responses to and catalysts of the growth of metropolitan Lagos.

The process of urbanization still continues in Lagos and with it comes various problems concerning administration, land acquisition, housing and rents, sanitation, transportation, water supply and crime. Table 1 shows projected population for the metropolis and the state from 1987 to 2004.

Table 1: Projected Population of Lagos State and Metropolitan and

Non-Metropolitan Lagos from 1987 - 2004

End of year	**Metropolitan Lagos in thousand**	**Implicit Annual growth rate percent**	**Non-Metropolitan Lagos in thousand**	**Total of Lagos State**	**Metropolitan Lagos as a percentage of Lagos population**
1987	7,178		779	7,957	90.21%
1988	7,580	5.56%	812	8,392	90.32%
1989	7,989		847	8,836	90.41%
1990	8,406		884	9,290	90.49%
1991	8,787		917	9,740	90.55%
1992	9,173	4.37%	952	10,125	90.60%
1993	9,565		988	10,125	90.63%
1994	9,975		1,026	11,001	90.67%
1995	10,406		1,065	11,471	90.72%
1996	10,861		1,105	11,966	90.76%
1997	11,342	4.48%	1,147	12,489	90.81%
1998	11,842		1,191	13,039	90.87%
1999	12,384		1,236	13,620	90.92%
2000	12,949		1,283	14,232	90.98%
2001	13,013		1,288	14,241	90.99%
2002	13,114	5.00%	1,290	14,246	91.00%
2003	13,231		1,342	14,331	91.03%
2004	13,239		1,344	14,333	91.03%

(**Source**: Master plan project, urban and Lagos State Ministry of Economic Planning and Land Matters, 2005).

The settlement system in Lagos is obviously dominated by metropolitan Lagos which incorporates 16 of the 20 Local Government Areas (LGA's): Agege, Ajeromi/Ifelodun, Amuwo Odofin, Alimosho, Apapa, Eti-Osa, lfako/ljaye, Ikeja, Kosofe, Lagos Island, Lagos Mainland, Mushin, Oshodi/Isolo. Shomolu, Surulere, and Part of Ojo (see Fig. 2).

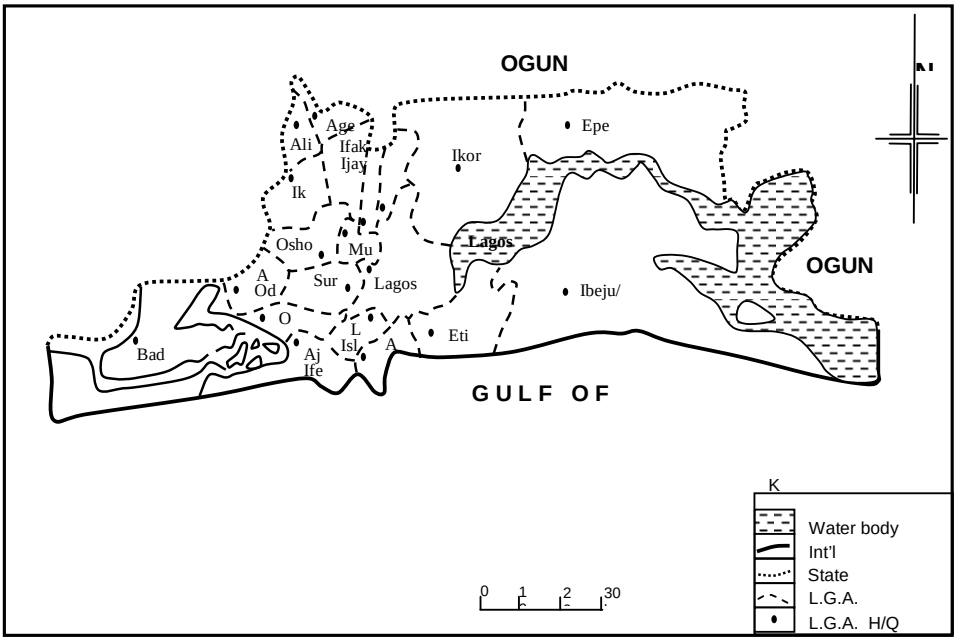

FIG. 2: MAP OF LAGOS STATE

SHOWING THE 20 L.G.AS

In each of the four remaining Local Governments, there is typically a focal town surrounded by numerous lower order settlements and village communities. In Badagry Local Government Area, the focal town is the ancient settlement and is reputed as being the first place in Nigeria where Christianity was preached in 1842.

There are about 120 other communities and villages in the Local Government including Ajara, Topo, Panko, Akaramumo, Aseri, Egun and others. The situation in Epe Local Government Area is similar, the local town being Epe. The other settlements are about 311, including Agbowalkosi, Itoiki, Ejirin, Onisawasawa, Ubuja, Ipabodo and numerous others.

lbeju Lekki Local Government Area has as the main town, not the Local Government Headquarters which is Akodo but a more developed small town, lbeju. Distributed irregularly around and between these two are about 153 other village communities including Lekki, Magbon Alade and others.

Finally, Ikorodu Local Government Area has its focal town the local government headquarters, lkorodu, which is a veritable commercial city in its own right being the location of the transmitters for the Federal Radio corporation of Nigeria, the voice of Nigeria and Lagos State Broadcasting Corporation (Radio and Television), it is an important communication centre as well as a major gateway to the country's hinterland.

Traffic Control Management Techniques

The major issue that needs be addressed concerning urban road networks in Lagos is improving the traffic flow through the use of traffic management and stricter control and law enforcement measures. Traffic flow enhancement plans such as intersection improvements, traffic signal control, introduction of one-way street, relocation of markets, and road marking and erecting of traffic signs could improve traffic flow in Lagos City.

In addition to the foregoing, re-enacting of the odd/even number plate, deterioration of roads and road safety are other major issues which deserve greater attention at all levels of government. Funding should also be increased to adequately take care of maintenance of existing roads as against the crave for constructing new one. These measures should constitute the corner stone of the urban highway policy in Nigeria (Lagos Urban Transport Project, 2002).

Safety Measures

In Lagos, road construction is undertaken on a somewhat monumental scale with many arterial roads and bridges having fly over extensions as well as feeder roads in the entire metropolitan area. These structures extend to lkeja, Agege to the North, Ketu to the North-East and Trade fair complex on the Lagos-Badagry expressway to the west.

Traffic signs to indicate how traffic should move are provided along the major highways, bridges and flyovers and also at the approach to areas of merging traffic. There are,

however, no major-road signs that should indicate which of two intersecting roads have right-of-way priority.

As a result of this lapse, many conflicts and accidents frequently occur at this lapse point. Furthermore, besides a few 'no parking' and 'no-u-turn' signs, no other signs are provided and where provided, they are few and far between along Lagos roads. They are also either too narrow, damaged or broken down heavy vehicles that illegally ply them or are parked on them.

The result is a total lack of traffic segregation between motorized and non-motorised and pedestrians, all of which jostle dangerously along the carriage-way. Only Broad street which is a dual carriage way, can boast of side walks. These sidewalks vary between 3 and 6 or 8ft in width in different sections of the some street.

In the preparative and corrective measures, one major technique of road safety measures is the law enforcement programmes which have five ingredients (lgbile, 1991). These are: (a) Defection (b) Aprehension (c) prosecution (d) Adjudication (e) Penalisation.

Detection: Defects in driving and vehicles are checked by the police/Road marshals with a view to taking appropriate enforcement action where necessary. These agents also educate the public, identify possible bottleneck on the road and supervise the general traffic. Law court adjudicate and penalize any traffic offender caught. Other preventive and corrective measures include:

i. Regular public education on traffic regulation;

ii. Correct driving technique and road behaviour

iii. Through regular vehicle inspection programme

iv. Certificate of road worthiness of vehicles by vehicle inspection officers

v. Safety campaigns on the hazards of driving at night, drunken driving, the use of safety clubs and organisation at all levels to inform drivers, parents and children about the revised Highway code.

These road safety measures are the highlights of an endless list of preventive and corrective approaches towards making the road adequately safe for all users. It has, however, been observed that human factor was prime among the causal factors and that traffic law enforcement was the main-ingredient for ensuring road safety Marshal and traffic law court in maintaining sanity on the roads. While police detects, apprehend and prosecute traffic law offenders, traffic law courts adjudicate and penalize offenders. These measures ensure people's compliance with road safety regulations. A continuous public education and impartiality in the dispensation of road safety measures are equally necessary in ensuring safer roads in Lagos State and Nigeria as a whole.

4. Pedestrian Safety Devices

In Lagos, not much attention has been paid to pedestrians. According to Morris and Zairian (1962) pedestrian traffic is far more fluid and adaptive. An important quality of any urban road system is the segregation of vehicular and pedestrian traffic by means of adequate walkways and crossing facilities for pedestrian. Empirical evidence indicates that nearly three – fourth of all road casualties occur at or near intersections which are mostly found in urban areas.

Pedestrian road crossing facilities which have been largely neglected in the majority of urban roads in Nigeria would need to be given adequate attention at the design and construction stages of highway development, especially in high density residential and commercial areas and in the

neighbourhoods of schools, markets, hospitals and motor parks. Steps have been taken to erect pedestrian bridges at critical locations on major roads in Lagos. Several of the older steel pedestrian structures are, however, in poor condition.

The primary road network in Lagos Mainland serves as major physical barriers to pedestrian cross movement. As a result, many people are forced to cross these major roads at locations where there is adequate crossing facilities.

Several of the pedestrian bridges are not used to any great extent because of poor positioning or lack of maintenance of associated pedestrian barriers. Most of the pedestrian bridges are too high and then steps so dangerously steep. They have no provision for wheel chairs especially in busy places such as Oshodi and occasionally pedestrians fall to their death because of poor construction. Most of the pedestrian structures have complementary pedestrian guard rails fencing erected along the median or sidewalks/separator (iron curtain) to discourage pedestrians from crossing at ground level. This is effective only for as long as pedestrian fencing is intact. Sizeable opening in most fences, however, have appeared which are not only used by reckless pedestrians but also in some cases attract casual market traders to set up and destroy the road markings.

Another issue is the maintenance of the pedestrian safety devices. Maintenance of traffic signals at junctions is now limited to just a couple of sites on major corridors and some sites observed in the lkeja area. The majority of corridor junctions do, however, show evidence of traffic signals installation at one time or the other although a vast majority of major corridor junctions now operate under traffic warden control. The most appropriate type of crossing facility should selected from among the following:

a. pedestrian phases in traffic signals at road junctions;

b. subways

c. footbridges

d. pelian crossings

e. zebra crossing (with or without the assistance of traffic wardens).

Zebra crossings are seen to be the cheapest to provide, and can be recommended for areas of medium volumes of pedestrian traffic with the assistance of traffic wardens, with yellow flasher beacons on both sides at night. The pedestrian facilities provided could be made useful to pedestrian alone either by raising the walkways some inches above the road pavement or they could be guarded by steel bars or pillars which will make it impossible for motorist to climb them into road side parking tools.

Pedestrian road crossing facilities which have not been attended to would be given adequate attention at the designated construction stages of highway development especially in high density residential and commercial areas.

Some of these safety devices are already being used in many developed countries. For instance, safety fences erected in Great Britain are intended to prevent vehicles leaving the carriage-way at location where it would endanger the occupants, common seating being at sharp bends and precipitous slopes. In the USA and in some European countries, similar fences are also extensively used on dual carriage-way to prevent vehicles crossing narrow reserved areas. The fences which are designed to withstand vehicles impacts are known as Guard rails.

One other safety device used in most of the developed countries is the roadside barriers.

Road-side Barriers: These include vehicle guard rails which prevent vehicles leaving minimum risk to occupants. The guard rails especially in Britain and USA have corrugated metal beams booted together to form a

continuous ribbon. Examples of these are the concrete median deflector barrier.

In most of the developed countries attempt has been made to compare the effectiveness of vehicle guard rails and safety Spkerbs. The latter are used as effective barriers for cars provided that the speed of the car is not more than about 5km/h. concrete guard rail show that the corresponding critical, velocity perpendicular to the rail is some what in excess of l6km/hr, the end point being the rolling action towards the rail imparted to the car upon impact. These can be seen along Jibowu expressway and Ojuelegba area of Lagos (Fig. 3).

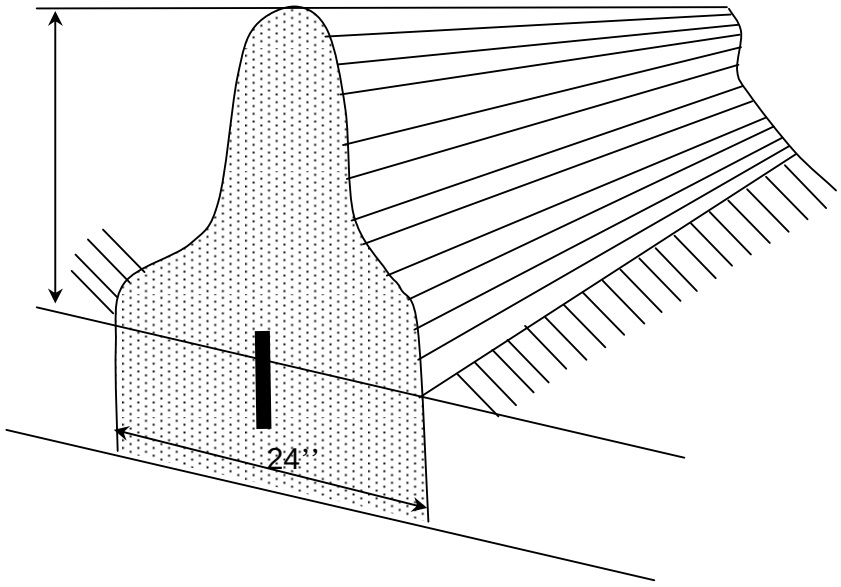

Fig. 3: Concrete Median Deflector Barrier

In USA the conventional corrugated steel guard rails mounted directly onto the support posts have a corresponding critical velocity of at least 20km/h. other types of barriers have been developed recently in U.S.A for various width of median. Among these are the rigid concrete deflector for very narrow medians on heavily-trafficked roads and the semi-rigid block out corrugated for slightly wider medians.

These are some of the safety devices available. Prior to the provision of these devices, however, the cultural background of the users i.e. (Nigerians, Lagosians in particular) should be an important criterion because the attitude and behaviour of people should be taken into consideration before any decision is taken on the provision and type of devices. (Fig. 4) showing pedestrian safety device along the Ikorodu road and Fadeyi area of Lagos State. From the foregoing the existing situation of unbalanced transport development calls for a thorough evaluation in order to ensure that all transport modes get the desired attention and intervention at the right time.

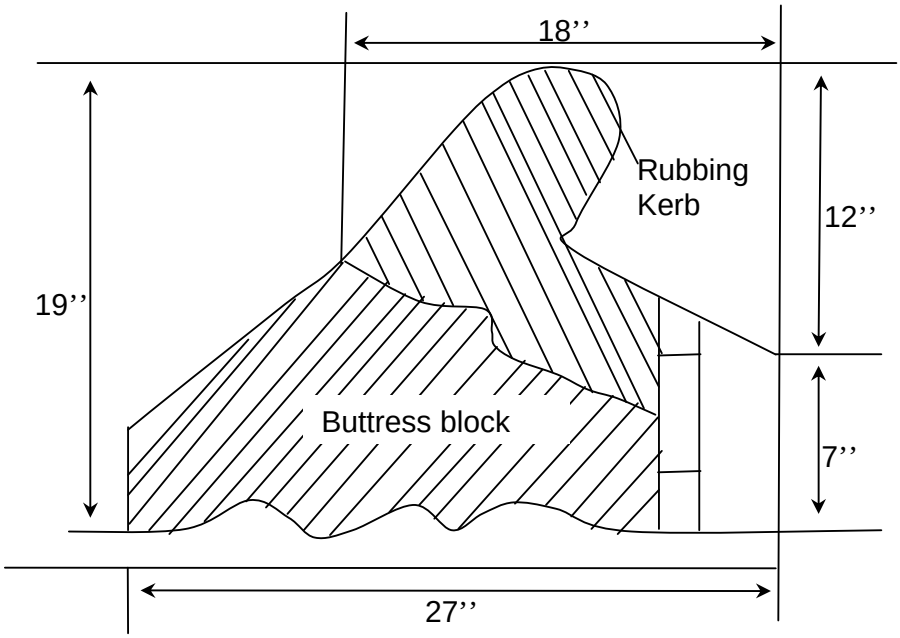

Fig. 4: Belgian Safety Kerb

5. Conclusion

The fact that each mode of transport has comparative advantages over others in terms of cost, efficiency and effectiveness over specific distances, underscores the need for each transport mode to be well developed in order to play its expected role. As found out in the review of the various

transport sub sectors, a lot more positive impact can be made by the transport industry if all transport modes are well coordinated, planned and managed. Hence the over all national transport policy must be such that the policy of each transport mode fits into it in a way that the transport sector can make more positive impact on the socio-economic growth and development of the country.

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