TECHNICAL NOTES
ON THE PRELIMINARY STUDY
ON THE PROJECT FOR IMPROVEMENT AND MAINTENANCE
OF NDOLA AND KITWE CITY ROADS IN THE REPUBLIC OF ZAMBIA

AGENDA	:	1. Present Condition of Target Roads
		2. Requirements of Road Rehabilitation
		3. Request on Road Furniture
		4. Request on Public Facilities for Community Empowerment
		5. Request on Road Maintenance Equipment
		6. Other requests for the Project
DATE AND TIME	:	August 5, 2006; 1300 - 1600hrs
VENUE	:	Department of Engineering Services, Ndola City Council
PARTICIPANTS	:	The participants of the meeting are as given in Annex-1

A meeting was convened by Mr. Daka Lazarus, Director of the Department of Development Planning, Ndola City Council, at 1300hrs on August 5, 2006, to discuss and confirm certain issues necessary to be resolved before the Project for Improvement and Maintenance of Ndola and Kitwe City Roads in the Republic of Zambia ("the Project") is executed. The following issues were taken up in the meeting, as listed in the above agenda:

1. Present Condition of Target Roads

   The lengths, widths, surface conditions and prioritization or urgency of improvement and maintenance of the target roads together with their justifications, as well as the public facilities, which might be relocated due to the Project were confirmed, as presented in Annex-2. The total road length of 21 stretches has been estimated at 29.8 km by GPS survey, but the requested length is 24.3 km. Therefore, the total length should be surveyed in detail during the Basic Design Study stage.

2. Requirements of Road Rehabilitation

   The target roads will require a minimum carriageway of 6.1 m (3.05 m x 2 lanes) in width, as shown in Figure 1. A wider carriageway of 7.0 m which was originally proposed by Ministry of Local Government and Housing, Zambia Government should be considered on the possibility during the Basic Design of the Project through a detailed road survey. An intermittent raised kerb should be installed to prevent the illegal parking of vehicles that causes damage to the road shoulders. The raised kerb should be designed in consideration of bus-bay and the required parking space near and in-front of a shop or office. The standard walkway width is 1.5 to 2.0 m, which should be decided in consideration of the existing road width and public spaces, and for minimizing the relocation of houses/public facilities. Furthermore, the interlocking block type of walkway is expected for installation because of easiness of the relocation of underground public facilities.

   An open ditch with concrete surfacing is required to protect road structures and to prolong the road life. Concrete cover for ditches in front of house entrances and shops/offices is required. Furthermore, the storm discharge of road ditches should be adequately flown down into drainage system downstream.

An improvement of drainage system downstream is requested to conduct under the Project, if it would be possible. The dimensions of the road ditch and drainage system should be estimated in consideration of the storm runoff catchment area.

3. Request on Road Furniture

For traffic safety, traffic sign (give way sign, stop sign, road name plate, etc.), pedestrian bridge, traffic lights, speed hump with signboards/posts, cat-eyes, bus bay, traffic markings, etc are requested to facilitate under the Project, if it would be possible, as mentioned in Annex-3

A roundabout structure or a traffic signal is requested to be installed at five (5) intersections on Vitanda Street, Independence Street, Kaunda Drive, Matelo Street and Kawambwa Road to enable the smooth flow of traffic. It is therefore imperative for the City Government to study the possibility of land acquisition for each structure before the Basic Design of the Project is started. A roundabout structure is recommendable because it is easier to construct and the maintenance cost is lower compared to the traffic signal.

4. Request on Public Facilities for Community Empowerment

For the sake of community empowerment to overcome poverty, sanitary reasons, etc., public toilets, bus station buildings, market shelters and/or their approach roads to the project roads are requested, at six (6) markets of Main Masala, Mushli, Lubuto, Northrise, Kabushi and Kansengu. Interlocking block pavements in and near the markets and bus stations are also requested in consideration of easier relocation construction of underground public facilities and lower maintenance cost.

5 Request on Road Maintenance Equipment

After completion of the project roads, maintenance work is required to prolong the life of pavement by the prompt repair of potholes and cracks. At present, 30 maintenance personnel of the City Government conduct maintenance work, such as cleaning of ditches and road surfaces without using any mechanical equipment.

A set of equipment for the repair of potholes and small cracks on the pavement is requested, such as one (1) Pedestrian controlled roller, three (3) sets of Plate compactor, three (3) sets of Asphalt hand sprayer, and one (1) Water bowser. In addition, one (1) Truck-mounted crane to carry and transport maintenance equipment and repair materials is requested.

Furthermore, one (1) Tower wagon is requested for the maintenance of street-lights. One (1) Excavator is also requested for drainage channel maintenance, if possible.

6 Other Requests for the Project

For the adequate planning, implementation and maintenance of the project roads, on-the-job training at the project sites and overseas training Japan are expected. Furthermore, some sets of computer are requested to install the data on pavement conditions for the effective maintenance works.

This Technical Notes was unanimously approved and signed by both parties, at Ndola City, Zambia, on August 17, 2006.

YUZO MIZOTA Road Planner JICA Study Team	DAKA LAZARUS Director Department of Development Planning Ndola City Council

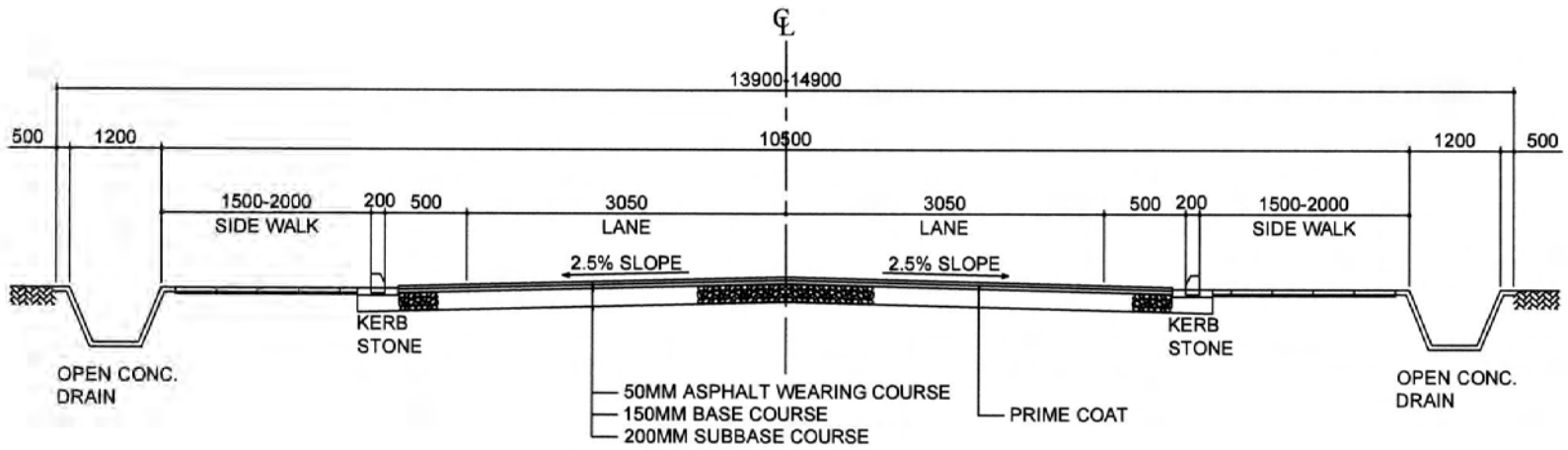

Figure 1 : Road Cross Section

Proposed Road Furniture

#	Road Name	Location	Name Plate	Stop Sign	Give Way Sign	Pedestrian Crossing	Speed Hump	Road Traffic Lights	Cat Eyes	Bus Bay	Justification
1	Vitanda Street	Northrise	2	2	-	-	-	One set at Vitanda/Kabelenga	-	-	Serves Commercial & Light Industrial Areas including a major Children Hospital
2	Arusha Street	Northrise	4	2	-	-	-	-	-	-	Serves Commercial & Light Industrial Areas
3	Kabelenga Avenue	Northrise	9	12	-	-	-	One set at Vitanda/Kabelenga	-	-	Serves High income Residential & Light Industrial Areas including a Presidential Guest house
4	Fitente Road	Northrise	4	2	-	-	-	-	From Traffic lights to Chinika rd junction	-	Serves High income Residential Area and High School
5	Kaunda Drive	Town Centre	4	2	-	-	-	-	-	-	Serves Government Offices and Commercial Area. Detour for heavy trucks
6	Makoli Avenue	Town Centre	2	2	-	-	-	-	At the bends near Matelo/Livingstone roads	4	Serves Commercial Area and is public transport route to two main bus terminals. Detour for heavy trucks
7	Independence Way	Town Centre	4	2	-	Near Buffs Club	One near Buffs Club	-	-	-	Serves most Government Offices (Magistrate & High Court, Local Authority etc) and Residential Area. Detour for heavy trucks
8	Zambia Way	Industrial Area	4	2	-	-	-	-	Near the link with Lukasu Rd	-	Serves heavy industrial area. Note that heavy goods vehicles are predominant on this road

Annex-3

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#	Road Name	Location	Name Plate	Stop Sign	Give Way Sign	Pedestrian Crossing	Speed Hump	Road Traffic Lights	Cat Eyes	Bus Bay	Justification
9	Matelo Road	Town Centre	2	2	-	-	--	-	-	-	Serves the Commercial area and is public transport route to the southern part of the city from the Town Centre
10	Nakambala Road	Industrial Area	2	2	-	--	-	-	-		Serves heavy industrial area. Note that heavy goods vehicles are predominant on this road
11	Kawambwa Road	Masala	2	2	-	-	-	-	-	-	Serves the Main Market and low/medium income residential areas
12	Lukasu Road	Industrial Area	3	1	-	-	-	-	-	-	Serves heavy industrial area. Note that heavy goods vehicles are predominant on this road
13	Chinika Road	Northrise	2	2	-	1	1	-	At the bend near Kalande school	-	Serves High income Residential Area, Light Industrial area and High and Primary Schools
14	Chambeshi Road	Kabushi/Mushili	4	-	1	-	-	-	From Masala traffic circle till after the bridge	8	Serves as a public transport route to Low income Residential Areas of Mushili, Kabushi, Lubuto and Kantolomba
15	Chitimukulu Road	Kabushi	2	2	-	2	1	-	-	-	Serves basic school, market and is low income Residential Area
16	Mindolo Road	Mushili	4	2	-	-	-	-	-	8	Serves market and can be major public transport route into Mushili Compound

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#	Road Name	Location	Name Plate	Stop Sign	Give Way Sign	Pedestrian Crossing	Speed Hump	Road Traffic Lights	Cat Eyes	Bus Bay	Justification
17	Madzimoyo Road	Mushili	3	2	-	-		-	-	6	Can be major public transport route into Mushili Compound
18	Kasama Road	Mushili	3	2	-	-		-	-	-	Serves a school and can be major public transport route into Mushili Compound
19	Nyati Avenue	Lubuto	4	2	-	-		-	-	6	Serves a high school and is major public transport route
20	Peter Chibesakunda	Lubuto	3	6	-	-	2 humps before school & Bus station	-	-	-	Serves a market, High School, Bus Station and major public transport route
21	Livingstone Road	Town Centre	3	1	-	-	-	-	-	-	Serves the commercial Area and main Bus Terminus and major public transport route
22	Market Street	Kabushi	3	3	-	-	-	-	-	-	Serves a market
23	Samfya Street	Kabushi	2	2	-	-	-	-	-	-	Serves a market
24	Twalichulile	Northrise	2	2	-	-	-	-	-	-	Serves a market

Annex-1

List of Attendants

Date and Time	:	August 5, 2006; 13:00 - 16:00
Venue	:	Department of Engineering Services Ndola City Council

(1) Ndola City Council

Mr. Daka Lazarus	Director of Development Planning
Mr. Brian Mazuba	Acting Deputy Director of Engineering Services
Mr. Joseph Zulu	Assistant Director of Engineering Services
Ms. Katayi Kamboyi	Road Engineer
Mr. Tresford Chipulu	Highways Support
Mr. Fusi Shonga	Planning Assistant

(2) JICA Study Team

Mr. Yuzo Mizota	Road Planner I
Mr. Masaki Ishii	Road Planner II

(3) Zulu Burrow Limited

Mr. Amil Miyanadeniya	Manager of Kitwe Branch
Mr. Isaac Chiewa	Road Engineer

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Ndola City council
Proposed Roads for Rehabilitation/Maintenance - 2006

Justification of Prioritisation of Road Sections

1. Road Nos. 14, 6, 21 and 9 of proposed road sections are major bus routes connecting Chisokone main bus terminal with Mulungushi which is the biggest bus stations in the City, to the low income and high density residential areas situated in the South of the City. The above roads are the high priority road sections earmarked for rehabilitation. However, Road No. 9 is 7th priority for rehabilitation because it is in a fair state of repair.
2. Road Nos. 4 and 13 in the residential area North of the City, are second priority group which effectively mitigate the traffic volume of Kwacha Road, and which are trunk roads connecting the Commercial Area with the residential area. Road No. 3 is lower priority compared to Nos. 4 and 13 because of its fair condition of pavement, while the rehabilitation of No. 3 is effective in mitigating the traffic volume.
3. Road No. 7 is the next priority some Government Office are located along this road.
4. Road No 1 is the next road proposed for rehabilitation and it connects the hospital with the industrial area.
5. The next priority road sections are Road Nos. 8, 12 and 10 in the industrial area of Ndola.
6. To develop a New Public Transportation System by bus in low income residential areas, Road Nos. 16, 17, and 18 are next priority sections. The Existing bus route along Road No. 20 in low Income residential area is proposed for rehabilitation next.
7. Road No. 11 connects Main Masala Market which is the biggest market in Ndola to the rest of the City and is considered as next priority.
8. Road No. 2 in commercial area is the next priority while Road No. 5 connecting to government offices is the next.
9. Road Nos. 15 and No. 19 in low Income residential areas are the next priority road.
10. Additionally, Road Nos. 6, 9, 5 and 7 functions as detours for heavy trucks which find it difficult to pass the over the slope of Nkana Road of the main transportation shunt of Heavy Vehicular Traffic of Ndola City.

Priority for Road Rehabilitation

No.	Road Name	Road Length (km)	Road Width (m)	Road Surface Condition	Service Facilities Within the Road Reserve	Bus Route	Priority
1	Vitanda Street	0.8	17～25	Poor	Water, Sewer, Electricity, Telephone	Yes*	8
2	Arusha Street	0.8	11～30	Poor	Water, Sewer, Electricity, Telephone	None	18
3	Kabelenga Avenue	2.2	23～25	Poor	Water, Sewer, Electricity, Telephone	Yes*	12
4	Fitente Road	1.4	15～19	Poor	Water, Sewer, Electricity, Telephone	Yes*	4
5	Kaunda Drive	0.3	40	Poor	Water, Sewer, Electricity	None	19
6	Makoli Avenue	0.9	20～23	Poor	Water, Sewer, Electricity,	Yes	2
7	Independence Way	1.7	22～25	Poor	Water, Sewer, Electricity, Telephone	Yes*	6
8	Zambia Way	2.1	16～23	Bad	Water, Sewer, Electricity	Yes*	9
9	Matelo Road	0.4	13～22	Bad	Water, Sewer, Electricity, Telephone	Yes	7
10	Nakambala Road	2.3	15～16	Bad	Water, Sewer, Electricity	Yes*	11
11	Kawambwa Road	1.6	13～18	Bad	Water, Sewer	Yes	17
12	Lukasu Road	1.2	14～16	Bad	Water, Sewer, Electricity	Yes*	10
13	Chinika / Sinde Road	1.8	14～21	Bad	Water, Sewer, Electricity	Yes*	5
14	Chambeshi Road	3.9	9～17	Poor	Water, Sewer, Electricity, Telephone	Yes	1
15	Chitimukulu Road	1.6	9～10	Poor	Water, Sewer, Electricity	Yes*	20
16	Mindolo Road	1.9	16～17	Poor	Water, Sewer, Electricity	Yes *	13
17	Madzimoyo Road	1.1	11～12	Poor	Water, Sewer, Electricity	Yes *	14
18	Kasama Road	1.4	10～13	Poor	Water, Sewer, Electricity	Yes *	15
19	Nyati Avenue	0.9	11～12	Poor	Water, Sewer, Electricity	Yes	21
20	Peter Chibesakunda	1.1	14～16	Poor	Water, Sewer, Electricity, Telephone	Yes	16
21	Livingstone Road	0.4	12～24	Poor	Water, Sewer, Electricity	Yes	3

* Future bus route after road rehabilitation

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