# GOVERNMENT OF ARUNACHAL PRADESH
## OFFICE OF THE CHIEF ENGINEER
## EASTERN ZONE, PWD, AP
## ITANAGAR-791111

# PUBLIC WORKS DEPARTMENT

PRE-FEASIBILITY REPORT
ON
**TRANS ARUNACHAL HIGHWAY**

SEGMENT: **GODAK –DAPORIJO (Subansiri bridge)**
**68.07KM**

**Projected Cost: - Rs 322.42 Crores**

# C O N T E N T S

# CHAPTER-1: EXECUTIVE SUMMARY

## *CHAPTER – 1.0*

## *EXECUTIVE SUMMARY*

### 1.1 **Background.**

The proposed Trans-Arunachal Highway in Arunachal Pradesh lies in the middle part of Arunachal Pradesh. The road starts from Tawang in Tawang District and terminates at Kanubari in Tirap District and extended to Assam. The proposed road would serve a vast populace living in entire districts of the State. The entire length of the proposed road is the existing all weather road of Major District Road (MDR) except few water gaps. However the roads are under various authorities in the form of road segments, the work of the preparation of Pre-feasibility report has been entrusted to Public Works Department (PWD), Arunachal Pradesh. The road segments of the existing road under various authorities are tabulated as below and location map is attached: - .

Table 1.1

| Sl. No. | Road Segments | Length (Km) | Authority |
|---|---|---|---|
| 1 | Tawang-Bomdila-Nechipu | 233 | BRO |
| 2 | Nechipu-Seppa | 99 | BRO |
| 3 | Seppa-Sagalee | 170 | PWD,AP |
| 4 | Sagalee-Kheel | 57 | PWD,AP |
| 5 | Kheel-Hoj-Potin | 40 | PWD,AP |
| 6 | Potin-Ziro | 42 | BRO |
| 7 | Ziro-Daporijo | 165 | BRO |
| 8 | Daporijo-Bame | 108 | BRO |
| 9 | Bame-Aalo | 42 | BRO |
| 10 | Aalo-Pangin | 26 | BRO |
| 11 | Pangin-Pasighat | 81 | PWD,AP |
| 12 | Pasighat-Roing-Tezu-Namsai-Satpani | 300 | BRO |
| 13 | Mahadevpur-Bordumsa | 22 | PWD,AP |
| 14 | Bordumsa-Namchik | 35 | PWD,AP |
| 15 | Namchik-NH-153 | 15 | PWD,AP |
| 16 | NH-153-Lalpul bridge | 9 | PWD,AP |
| 17 | Lalpul-Manmao | 32 | PWD,AP |
| 18 | Manmao-Changlang | 44 | PWD,AP |
| 19 | Changlang-Khonsa | 64 | PWD,AP |
| 20 | Khonsa-Longding | 52 | BRO |
| 21 | Longding-Kanubari | 50 | PWD,AP |
| 22 | Kanubari-Satnaguri-Sapakhati-Bogibill | 92 | PWD,Assam |
| 23 | Bogibill bridge point-Akajan | 33 | PWD,Assam |
| | Total | 1811 | |

All the project roads are indicated in Figure 1.1 as Index Map. This pre-feasibility report, however relates to the road segment

of Godak to Daporijo (subansiri bridge point) on Ziro-Daporijo BRTF road and part of Daporijo-Bame BRTF road. Daporijo is the District Head Quarters of Upper Subansiri District. Godak is the habitation in the Upper Subansiri district on the boundary of the Lower Subansiri and Upper Subansiri districts.

## *1.2 The State of Arunachal Pradesh.*

The state of Arunachal Pradesh, with an area of nearly 83.743 Sq. Km and located in the north-eastern part of India, lies between $26^0$28' N TO $29^0$ 30' N Latitude and $91^0$ 30' E to $97^0$ 30' E Longitude. The state has a long international border with China (1080 Km) in the North and North-East, Myanmar (440 Km) in the East and Bhutan (160 Km) in the West. It has a common border with Nagaland in the east and south-east and Assam in the south. Itanagar, the state capital, is located at $28.08^0$ N Latitude and $93^0$.40' E Longitude at an altitude of 530 m above mean Seal level (MSL)

The major rivers in the state are Siang, Kameng, Subansiri, Kamala, Siyum, Dibang, Lohit, Noa-Dihing, Kamlang and Tirap.

For administrative purpose, the State is divided into sixteen districts, namely Tawang, West Kameng, East Kameng, Papumpare, Lower Subansiri, Kurung-Kumey, Upper Subansiri, East Siang, West Siang, Upper Siang, Upper Dibang Valley, Lower Dibang Valley, Lohit, Changlang, Tirap and Anjaw. There are 36 Sub-divisions, 64 Blocks, 149 Circles, and 16 major towns in the State.

The population of the state as per 2001 census is 1,091 millions, while the same in 1991 was 0.865 millions. The density of population is reported to be 13 persons per sq km in 2001; the same was reported to be 10 persons per sq km and the national average was 273 persons per sq. km in 1991.

Picturesque landscape is a common feature in the State; the landscape varies from snow capped peaks in the north to vast agricultural lands in the south. The highest peak in the state in Kangte on the Indo Tibetan boarder in West Kameng district (7090 M above MSL).

The state in rich is mineral deposits. Existence of minerals in abundance has been found earlier, but commercial exploitation is yet to take place.

There are rich reserve of flora and fauna of the state, which also boasts of a number of class medicinal plants and orchids. A substantial amount of revenue is earned every year from the forest produces. The state is quite rich in horticulture production also. Fruits are also produced in abundance along the project road.

A large number of hydro power projects are coming up in the state, which will go a long way to meet the present demand for additional power.

The density of road network of Arunachal Pradesh, based on roads completed and those under construction, is reported to be about 14.96 Km./100 sq. km of the total geographical area, against a national average of 42 km/100 sq. km.

The state however lacks a civil airport and a well-developed railway network, serving the interiors of the state. During recent times, helicopter services to some of the townships of the state from neighboring state of Assam has provided some relief to a small segment of the population. Absence of a sustainable and cost effective alternative has made the road network all the more important for both interstate and intrastate surface communications.

## 1.3 Project Road surroundings

The proposed road of 68.07 km that is from Godak to Daporijo (Subansiri bridge point) is a part of BRO Road from Ziro the district headquarter of Lower subansiri district to Daporijo, the District Head Quarter of Upper Subansiri,and a very small part of the Daporijo-Bame BRO road connecting Upper Subansiri and West Siang districts.

This stretch of road takes off from chainage. 68.07 km near Godak on Ziro-Daporijo BRO Road. The proposed route falls within Upper Subansiri District and is located in between Latitude $27^0$ 45' to $28^0$ 42' and Longitude $93^0$ 18' to $94^0$ 36'. The proposed TRANS ARUNACHAL Highway from Tawang to Tirap shall traverse through this alignment to provide inter connectivity to Lower Subansiri district with Upper Subansiri district and onwards to West Siang District . Since this stretch of road provides inter District connectivity, it has a paramount importance for uplifting the pre dominantly schedule tribe area of basic facilities like education, health, tourism, Agriculture, Horticulture, Industry and other marketing purposes.

The districts of Upper Subansiri and Lower Subansiri form the immediate surroundings of the project stretch.

Upper Subansiri, with an area of 7032 sq km, lies in the middle part of the State and is located in between $27^0$ 45' to $28^0$ 42' northern latitude and $93^0$ 18' to $94^0$ 36' eastern longitude the entire region of District is pre dominantly mountainous , a part of the eastern Himalayas.

The area is characterized by hilly terrain, with small intermittent stretches of flat/rolling lands with human settlements. Daporijo, the district headquarter is the most important town of the district. The highest peak in the district is Shikar Hill. The population of the district is 55346 with the population density in the district as 8 persons per sq km.

## 1.4 *Project Objectives.*

The main objective of the study is to prepare a Pre-feasibility project report for up-gradation of existing MDR standard road to a double lane NH standard road to be constructed under funding from Special assistance package, from The Government of India.

# CHAPTER-2: SOCIO-ECONOMIC PROFILE

## *CHAPTER – 2.0*

## *SOCIO-ECONOMIC PROFILE.*

### 2.1 General

This chapter presents the socio-economic profile of the board influence area as well as immediate influence area of the project road prepared through studies of the socio-economic parameters of the same. Broad influence area has been defined as the state of Arunachal Pradesh and the immediate influence area is formed by the district of East Siang through which the project road traverses.

### 2.2 Physical Features.

The state's topography is by the large, mountainous with precipitins slopes forming deep gorges culminating into several streams and rivers. The whole state has been divided int0 46 geo-ecological units having an average area of about 200 sq. km each. The state falls under the Upper-Brahmaputra river system constituted by six river basins having specific geo-ecological characteristics of their own. Due to mountainous topography and high altitudes, there are major constraints in construction of roads and bridges.

### 2.3 Climate and Rainfall.

The seasons of winter and monsoon are pronounced in the state. Winter has been found to be prominent from the month of December to January. Monsoon is quite intense from June to September, accounting from about 87% of the average annual rainfall. However, light to medium rainfall continues throughout a major part of the rest of the year. Monsoon helps agricultural activities in the state appreciably, which are carried out mostly through terrace farming along hill slopes, and pockets of flat/ rolling terrain around villages and between two nearby hills.

Average annual rainfall in the state is recorded to be about 1368 mm (1991), which is more than double of the national average of 1250 mm. The pattern of normal monthly rainfall shows that the monsoon arrives in the state in April and continues up to September. The months from May to September experience quite heavy rainfall, having a monthly average of normal rainfall to be more than 450 mm.

### 2.4 Socio-Economic Profile of Arunachal Pradesh.

#### *2.4.1 Area and Administrative Setup.*

The state is divided into sixteen districts, namely, Tawang, West Kameng, East Kameng, Papumpare, Lower Subansiri,

Upper Subansiri, East Siang, West Siang, Upper Siang, Upper Dibang Valley, Lower Dibang Valley, Lohit, Changlang, Tirap, Kurung Kumey and Anjaw. There are 36 Sub-divisions, 64Blocks, 149 circles, and 16 major towns in the state.

### *2.4.2 Demographic Features.*

*Population Size and Trends*

According to the 2001 census, total population in the state was 1.091 millions; the state recorded a population of 0.864 millions in 1991. The rural population of the state recorded 80% in 2001, reducing the proportion by 7% from the census of 1991.

Table 2.1
Population Characteristics of districts of Arunachal Pradesh

| District | Population In 2001 | Urban population In % (2001 | Decadal Growth | | Sex Ratio | | Population Density/ Sq Km | | Literacy Rate | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 81-91 | 91-01 | 1991 | 2001 | 1991 | 2001 | 1991 | 2001 |
| Tawang | 34,705 | 13 | 30.15 | 22.69 | 844 | 963 | 13 | 16 | 29.8 | 41.1 |
| West Kameng | 74,595 | 09 | 35.74 | 32.21 | 822 | 749 | 8 | 10 | 48.3 | 61.7 |
| East Kameng | 57,065 | 26 | 17.92 | 13.24 | 962 | 985 | 12 | 14 | 26.2 | 40.9 |
| Papumpare | 121,750 | 51 | 83.24 | 67.21 | 831 | 899 | 25 | 35 | 55.1 | 70.8 |
| Lower Subansiri | 97,614 | 13 | 14.06 | 17.37 | 957 | 985 | 8 | 10 | 30.1 | 45.0 |
| Upper Subansiri | 54,995 | 28 | 27.09 | 9.8 | 867 | 973 | 7 | 8 | 38.3 | 50.8 |
| West Siang | 103,575 | 20 | 31.64 | 15.17 | 873 | 913 | 11 | 13 | 45.6 | 60.3 |
| East Siang | 87,430 | 25 | 30.26 | 21.66 | 877 | 937 | 18 | 22 | 47.9 | 61.2 |
| Upper Siang | 33,146 | 0 | 31.50 | 19.32 | 822 | 858 | 4 | 5 | 35.3 | 49.8 |
| Dibang Valley (combined) | 57,543 | 18 | 39.03 | 33.61 | 788 | 840 | 3 | 4 | 46.9 | 59.5 |
| Lohit | 143,478 | 19 | 57.85 | 30.78 | 797 | 857 | 10 | 13 | 49.2 | 56.1 |
| Changlang | 124,994 | 10 | 53.56 | 30.84 | 863 | 905 | 20 | 27 | 43.2 | 51.9 |
| Tirap | 100,227 | 15 | 28.70 | 17.21 | 862 | 911 | 36 | 42 | 32.1 | 42.0 |
| **Total State** | **10,91,117** | **20** | **36.83** | **26.21** | **859** | **901** | **10** | **13** | **41.6** | **54.7** |

*Source: District Handbooks.*

*Growth Rate*

The average annual growth rate of population in the state, 1981-1991 was estimated to be 3.68% as against 2.14% at all

India level. The corresponding figures, 1991 to 2001 are 2.62% and 2.13% respectively. Among the districts of Arunachal Pradesh, Upper Subansiri district recorded the minimum average annual growth rate of 6.24% in the period of 1981-1991.

*Density*

Density of population in the state of Arunachal Pradesh was 10 persons per sq km against 273 persons per sq km in India as per 1991 census. Among the north-eastern states Arunachal Pradesh is ranked seventh wile Assam has the maximum density of 286 persons per sq km. Within the state of Arunachal Pradesh, Tirap has the highest density of 36 persons per sq km while Dibang Valley has the lowest density of 3 persons per sq km. According to 2001 census; the population density of the state is 13 persons per sq km; within the state. Tirap is still the densest district, while Dibang has the density with population of 42 and 4 per sq km respectively.

*Literacy Rate*

In the state of Arunachal Pradesh, the literacy rate of population above 6 years of age was 41.59% against all India literacy rates of 52.9% in 1991. Amongst the North-eastern states; Arunachal Pradesh stands last while Mizoram with 82.27% literacy rate ranked first in 1997, the rate of literacy in the state was 69% for male, 48% for females and 60% for all persons. The overall literacy rate of the entire state has increased from 41.6% in 1991 to 54.7% in 2001. Within the state, Papumpare enjoys the highest rate, while the Tawang has the lowest.

*Rates of Birth, Death and Infant Mortality*

The rates of birth and death and infant mortality of the state are presented in percentages in the following table (**Table 2.2**):

Table 2.2

Rates of Birth, Death and Infant Mortality in Arunachal Pradesh (1991)

| Type of Rate in Percentage | For entire state | For rural areas | For urban areas |
|---|---|---|---|
| Birth | 21.4 | 22.3 | 12.2 |
| Death | 5.8 | 6.1 | 2.0 |
| Infant Mortality | 47.0 | 49.0 | 17.0 |

### *2.4.3 Work Force.*

The work distribution rate in the state was 46.24% (1991) as against 37.46% at all India level. Arunachal Pradesh is ranked second (46.24%) in this parameter amongst all the seven north-eastern states while Mizoram is ranked first with 48.91% and Tripura is ranked last at 31.41%. The distribution of workers in various categories in the state are listed in Table 2.3

Table 2.3

Distribution of Workers in various categories

| Year | Main Workers | Marginal Workers | Non Workers | Dependency Ratio (nw/w) |
|---|---|---|---|---|
| 1961 | 2,27,513 (67.69) | - | 1,09,045 (32.90) | 0.479 |
| 1971 | 2,69,542 (57.65) | - | 1,97,969 (91.35) | 0.735 |
| 1981 | 3,13,435 (49.61) | 19,120 (3.030) | 2,99,284 (47.56) | 0.900 |
| 1991 | 3,90,976 (45.22) | 8,806 (1.02) | 4,64,776 (53.76) | 1.163 |

*Source: Census of India.*

### *2.4.4 Land use Pattern.*

The total geographical area of the state is about 84,000 sq km (approx), out of which 70% constitutes broad and narrow valleys, 10% foothills and flat area and 20% constitutes wooded peak area. Even out of this, 62% to 65% constitutes to be under shifting cultivation (jhum). The land use pattern of the state is presented in **Table 2.4.**

Table 2.4
Land use Pattern of Arunachal Pradesh (90-91)

| Sl. No. | Type of Land use | Area (in %) |
|---|---|---|
| 1. | Net Area sown | 43.90 |
| 2. | Area under current fallow | 8.60 |
| 3. | Fallow other than current fallow | 10.99 |
| 4. | Other cultivated land excluding fallow land | 13.51 |
| 5. | Cultivated waste land | 10.03 |
| 6. | Area not available for cultivation | 12.97 |
| | Total area in Hectare | 3.29,887 |

*Source: Economic Review of Arunachal Pradesh (1997 – 1998)*

### *2.4.5 Agriculture.*

Agriculture is the main stay of the people of the state of Arunachal Pradesh. The sedimentary alluvial soil, ideal for agriculture, is confined only to a few stretches of flat areas in the river valley. The Pasighat plains of Dibang-Sirs Rivers, the Lohit-Tirap plain of Tezu and Neo-Dihing Rivers are noticeable for settled cultivation with crop dominated land use pattern. Inspite of relative intensification of farming system in these plans, there is a record deficiency of food for local needs. The status of agriculture in the state (Base year 1999 – 2000) is presented in the following table (**Table 2.5**)

Table 2.5
Status of Agriculture in Arunachal Pradesh
(Base year 1999 – 20000)

| Sl. No. | Item | Area with Unit |
|---|---|---|
| 1 | Total cultivation area (as on 31 March 2000) | |
| | Under Jhum (shifting) cultivation | 1.10 lakh hectare |
| | Under permanent cultivation | 0.90 lakh hectare |
| 2 | Percentage of area under high Yielding Varieties | |
| | Percentage to net area | 29.5 (approx) |
| | Percentage to gross area | 24.25 (approx) |
| 3 | Area coverage under | |
| | PP Activities | 36,500 hectares |
| | Fertilizer Application | 22,200 hectare |
| 4 | Per unit consumption of fertilizer | |
| | To net area | 3.50 Kg/hectare |
| | To gross area | 2.92 Kg/hectare |
| 5 | Coverage under assured irrigation | |
| | To net area percentage | 19% |
| | To gross area percentage | 15% |
| 6 | Area statistics | |
| | Net area | 1.97 lakh hectares |
| | Gross area | 2.40 lakh hectares |
| | Cropping intensity | 122% |

Cropping pattern of the state is characterized by the dominance of food-grain crops. Paddy is a principal food-grain, which occupies a major share of Gross cultivated Area (GCA) i.e. 49.16% in 1995-96. Maize and Millets are also important food-grain, which account for 13.61% and 8.6% of the GCA in the state, while wheat occupies the forth place in the cropping pattern. Because of humid tropical climatic conditions and fertile alluvial wet soils in the plains of the state, oilseeds and potato are the major crops, which are grown for fulfilling the domestic demand. Sugarcane is also a commercial crop, which occupies more than 14% of GCA (1993 – 1994), in the state **Table 2.6** shows the average yield rates of important crops. **Table 2.7** shows the area and amount of production under principal crops in the state.

Table 2.6
Average yield rates of important crops.

| Sl. No. | Crops | Year of Production | | | Percentage increase/ Decrease | |
|---|---|---|---|---|---|---|
| | | 1994-95 | 1995-96 | 1996-97 | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Rice | 9.67 | 10.48 | 11.17 | (+) 8.38 | (+) 6.58 |
| 2 | Wheat | 13.46 | 13.81 | 14.69 | (+) 2.60 | (+) 6.37 |
| 3 | Maize | 16.90 | 15.73 | 13.97 | (-) 7.36 | (-) 11.19 |
| 4 | Millet | 10.01 | 9.89 | 9.57 | (-) 1.20 | (-) 3.23 |
| 5 | Pulses | 9.34 | 9.36 | 10.03 | (+) 0.21 | (+) 7.16 |
| 6 | Oilseeds | 9.15 | 10.18 | 9.25 | (+) 11.26 | (-) 9.13 |
| 7 | Sugar cane | 245.31 | 225.33 | 221.40 | (-) 8.14 | (-) 1.74 |
| 8 | Potato | 81.04 | 75.03 | 73.08 | (-) 7.42 | (-) 2.60 |

*Source: Economic Review of Arunachal Pradesh.*

Table 2.7
Area under principal crop and production (1999 – 2000)

| Principal Crop | Total Area (Lakh hectare) | Total production (MT) | Yield (Quintals Per hectare) |
|---|---|---|---|
| Rice | 122740 | 134807 | 10.95 |
| Maize | 35637 | 48346 | 13.56 |
| Millets | 19800 | 17123 | 8.64 |
| Wheat | 3896 | 5096 | 13.0 |
| Pulses | 6554 | 6634 | 10.12 |
| Total food crops | 188627 | 211979 | 11.23 |
| Potato | 4960 | 32434 | 65.39 |
| Ginger | 4399 | 34890 | 79.31 |
| Oilseeds | 27748 | 27228 | 9.81 |
| Turmeric | 404 | 1473 | 36.45 |
| Chilly | 1499 | 1696 | 11.31 |
| Sugar cane | 809 | 16219 | 20.04 |
| Seasonal | 12811 | 37060 | 20.04 |

| | | | |
|---|---|---|---|
| vegetable | | | |
| Total commercial crop | 52630 | 151000 | 28.69 |

### *2.4.6 Horticulture*

Horticulture is an important activity prevailing in the state. The agro-climatic conditions in the state are congenial for horticulture development. The major kinds of fruits produced in the state are pineapple, apple, banana, orange and lemon and other fruits produced with low productivity are plum, walnut, guava, pears, papaya, litchi, jack fruit, mango, cardamom and black pepper etc. The area under pineapple is the highest with 7143 ha with maximum productivity of 28,000 Mt during 2996-97. Production of apple and orange is 14500 Mt and 122997 Mt with 6186 ha of area respectively.

In 1962-63, the state government established 15 horticulture demonstration gardens and in 1966-67, the number was 37, which rose to 744 in 1970-80 and to more than 1200 in 1995-96. Horticulture nurseries and horticulture farms also increased from 6 in 1967-68 to 51 and 1979-80 and from 15 (1975-76) to 60 in 1979-80 respectively.

### *2.4.7 Mining Activities.*

The state of Arunachal Pradesh is endowed with vast reserve of mineral resources. Gold, Iron Ore and Manganese are the major mineral produces of the state. **Table 2.8** shows values of various mining produces during 1997-98.

Table: 2.8
Mineral Production in Arunachal Pradesh (1997-1998)

| Name of the Mineral | Value of Production In Rs. '000 |
|---|---|
| All minerals | 125114 |
| All fuels | 123591 |
| Gold | 214198 |
| Iron Ore | 9017 |
| Lead concentrate | 68065 |
| Manganese | 24253 |
| Non-metallic | 1736872 |
| Minor minerals | 1523 |

### *2.4.8 Power*

The state of Arunachal Pradesh is known as the Power House of the North-East as it is one of the richest states in terms of hydropower potential. The total hydropower potential available in the state is estimated to be 30,000 MW, which is more than one third of the total hydropower potential of the country. Only

23.64 MW (just 0.05% of the total potential) has so far been harnessed in the state due to its limited resources. Both Tawang and East Siang districts of the state have four mini micro hydro projects each (**Table 2.9**) One hydro power project of 405 MW at Ranganadi is under construction by NEEPCO in subansiri, Dibang, Dimwe and Kameng areas, three projects are under sanction and investigation, while four projects in subansiri, Dibang, Dimwe and Kameng areas are under review. These new projects with 22042.50 MW capacity (**Table 2.10**), which will fulfill the need of the state in the coming days.

Table: 2.9

District wise list, Location and Capacity of Mini Micro Projects in the state

| Sl. No. | District | Name of Project | Location | Installed Capacity (MW) |
|---|---|---|---|---|
| 1 | Tawang | Nuranang, Khangtang & Mukto | Jang, Seru, Mukto | 22.5 |
| 2 | Tawang | Kitpi Ph-II | Kitpi | 3.0.0 |
| 3 | West Kameng | Domkhrong | Kalaktang | 2.0 |
| 4 | East Kameng | Pacha | Seppa | 3.0 |
| 5 | Upper Subansiri | Jugdin Nalah & Sippi | Taliha & Daporijo | 6.0 |
| 6 | Lower Subansiri | Kush & Payu | Sangram, Koloriang | 3.0 |
| 7 | Upper Siang | Sipit, Sirnyuk & Sidip | Gette, Jengging, Mariyang. | 7.0 |
| 8 | West Siang | Liromoba & Kambang | Liromoba & Kambang | 9.0 |
| 9 | East Siang | Pasighat Ph-II, Rina, Subbung & Siku | Pasighat, Rina, Supsing, Mebo | 5.50 |
| 10 | Dibang Valley | Deopani Ph-II & Eme River | Roing | 2.0 |
| 11 | Lohit | Mati Nallah & Halaipani | Chingwinti, Hayuliang | 10.0 |

Table: 2.10

List of projects under Survey and Investigation

| Sl. No. | Name of the project | Installed Capacity (MW) | Name of executing agency |
|---|---|---|---|
| 1 | Ranganadi | 405 | NEEPCO |
| 2 | Kameng HEP | 600 | NEEPCO |
| 3 | Subansiri HEP | 4500 | Brahamputra Board |
| 4 | Dihang HEP | 14000 | Brahamputra Board |

| | | | |
|---|---|---|---|
| 5 | Dimwe HEP | 600 | NEEPCO |
| 6 | Kameng Dam Ph-II | 400 | Brahamputra Board |
| 7 | Ranganadi Ph-II | 415 | NEEPCO |
| 8 | Sissiri Multi Purpose Damp | 300 | CWC |
| 9 | Kamlang HEP | 22.5 | CWC |
| | Total | 22042.5 | |

*Source: Directorate of Power, AP.*

### *2.4.9 Livestock and animal Husbandry.*

The state is rich in its livestock population. It has around 8.34 lacs livestock population in 1991-92, out of which cattle population accorded for the highest share of nearby one third (32.15%). Pigs occupied highest place accounting to more than one-forth (26.05%) of total livestock population of the state Goat population accounted for nearly 13.05%. Dairy, milk production and collection of wool are the main activities related livestock within the state.

### *2.4.10 Pisciculture (Fisheries)*

Pisciculture has gained acceptability and confidence among the farmers of the state and fish farming has become a subsidiary occupation of the farmers for gainful employment to supplement their income from agriculture. The activities in this sector are ensuring three basic requirements like generating self – employment, supplementing protein us food and as an additional source of income. In 1996-97 an area of 2257 ha was under systematic fish-culture against 7000 hectares of estimated potential of cultivable water area of the state. Two eco-hatcheries through private fish farmers and seven hatcheries were developed up to 1995-96. Paddy cum fish culture has taken firm footing in Apatani plateau of Lower Subansiri district in Arunachal Pradesh and has been extended to other districts where suitable area for paddy cum fish culture is already available. During 1996-97, nearly 220 tonnes of fish were produced under paddy cum fish culture.

### *2.4.11 Sericulture*

The production of mulberry silk has been found to be 1000 kg (97-98), while the same of Eri has been found to be 12,000 kg (97-98)

### *2.4.12 Forest Resources.*

The socio-economic life of the people of Arunachal Pradesh centers on the forest. Most of the population depends directly upon forests for wood, house building materials, timber and

other minor forest produces. Forest in the state covers about 51.540 sq km, which is about 62% of the total geographical area under the state. Around 1018 sq km of forest area has been surveyed, demarcated and notified as Reserve Forest, Anchal and village Reserve Forest for providing a basis for their scientific management and sustainable use. So far, nine active wildlife Sanctuaries, two national Parks covering a total protected area of 9483 sq km for conservation and presentation of rich biological diversity of the state have been created. As per the estimate of 1993-94, major forest produces included 68,329 cum of timber and 44.377 cum of fuel wood. The corresponding revenue earned from forest produces is about Rs. 2260.05 lacs.

### *2.4.13 Industries.*

Arunachal Pradesh is industrially backward region, compared to the rest of the country. There is no large-scale industry of industrial unit and cottage and small scale industrial structures have craft and sericulture because of availability of raw material for handicraft development and favorable climate for the growth of silk worms feed plants. The maximum numbers of small scale industrial units (SSI) are located in Papumpare district with total annual production of Rs. 3283 lacs in 1995-1996. The district of Papumpare with 35 numbers of industries ranks the highest among the entire district in the state, with an area of 14.77 acres. **Table 2.11** below shows the distribution of number of industrial units, number of persons employed, total investment and annual production in the state **Table 2.12** below reflects the industrial areas and estates developed in the state. The industries proposed to be set up in the state are listed in **Table 2.13.**

Table: 2.11
Small Scale Industries in Arunachal Pradesh (as on 31 March 1998)

| District. | No. of Unit | Total Employment number | Total investment (Rs. Lakhs) | Total Annual production (Rs. Lakhs) |
|---|---|---|---|---|
| Tawang | 92 | 652 | 195 | 219 |
| West Kameng | 43 | 486 | 116 | 277 |
| East Kameng | 28 | 309 | 44 | 116 |
| Papum Pare | 336 | 3684 | 589 | 3282 |
| Lower Subansiri | 76 | 568 | 21 | 112 |
| Upper Subansiri | 108 | 715 | 35 | 21 |
| West Siang | 525 | 3046 | 74 | 525 |
| East & Upper | 240 | 1039 | 329 | 3929 |

| | | | | |
|---|---|---|---|---|
| Siang | | | | |
| Dibang Valley | 160 | 1047 | 191 | 1462 |
| Lohit | 157 | 1557 | 360 | 2085 |
| Changlang | 169 | 1946 | 673 | 3129 |
| Tirap | 70 | 1617 | 18 | 2196 |
| **Total** | **2004** | **16666** | **2645** | **17353** |

Table: 2.12
Industrial Area and Estate development in Arunachal Pradesh

| District | No. of Estate | Industrial Area acquired (acres) | Industrial Plots | |
|---|---|---|---|---|
| | | | Developed | Allotted |
| Tawang | 1 | 10.11 | 1 | 1 |
| West Kameng | 1 | 15.00 | 5 | 5 |
| East Kameng | - | - | 0 | 0 |
| Papum Pare | 2 | 14.77 | 35 | 35 |
| Lower Subansiri | 1 | 50.00 | 5 | 0 |
| Upper Subansiri | - | - | 0 | 0 |
| West Siang | 1 | 50.00 | 4 | 4 |
| East & Upper Siang | 1 | 10.00 | 2 | 2 |
| Dibang Valley | 1 | 10.00 | 3 | 3 |
| Lohit | 1 | 4.00 | 2 | 2 |
| Changlang | 2 | 7.62 | 6 | 6 |
| Tirap | 2 | 25.00 | 8 | 6 |
| **Total** | **13** | **196.50** | **71** | **64** |

Table: 2.13
List of proposed agro-based industries in Arunachal Pradesh

| Sl. No. | Industries | Estimated Investment (in lakhs) | Land Required (Sq.m.) | Manpower Required | Location | Power Required (KVA) |
|---|---|---|---|---|---|---|
| Agro Based | | | | | | |
| 1 | Sugar Mill | 50 | 250000 | 450 | Pasighat | 2500 |
| 2 | Alcohol based on Molasses | 1050 | 15000 | 60 | Pasighat | 1400 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | Potato Alcohol | 1050 | 10000 | 50 | Bhalukpong/ Pasighat, Naharlagun | 1500 |
| 4 | Beer Brewing Unit | 620 | 25000 | 100 | Naharlagun | 200 |
| 5 | Dehydrated Ginger | 650 | 10000 | 100 | Niglo, Ngorlung, Changlang | 100 |
| 6 | Frozen Vegetable | 650 | 30000 | 120 | Along, Bomdila, Khonsa | 300 |
| 7 | Starch from Maize | 1000 | - | - | - | - |
| 8 | Mushroom Processing unit | 250 | 20000 | 100 | Itanagar, Bomdila, Tawang, Zero, Daporijo | 200 |
| | Horticulture Based. | | | | | |
| 1 | Tissue Culture Project | 125 | - | 35 | Itanagar, Tawang, Along | 75 |
| 2 | Cut flower green house project | 150 | 15000 | 50 | Itanagar, Ziro, Daporijo, Along | 100 |
| | Herbal Medicine plantation Based industry | | | | | |
| 1 | Extension of Diosgenism from Dioscorea Floribunda | 50 | - | - | Niglok-Ngoriung (East & West Siang) | - |
| | Plantation Based | | | | | |
| 1 | Rubber processing unit | 20 | - | - | Tirap & Changlang districts | - |
| 2 | Cane processing units | 50 | - | - | Dibang Valley, Lohit, West Kameng. | - |
| 3 | Mini paper plant | 1050 | - | - | Niglok, Ngorlung (East Siang) | - |
| | Mineral Based. | | | | | |
| 1 | Lime stone Mine project | 900 | - | - | Pangin | - |
| 2 | Dolomite issue project | 800 | - | - | Jamiri near Kalpi Village & near the junction of Nagmandir & Buragaon Road. | |
| 3 | Mini Cement plant | 1000 | 40000 | 150 | Pangin | 1800 |
| 4 | Bio Gas Project | 2 | - | - | - | - |
| 5 | Metallic Magnesia from Dolomite | 325 | - | - | - | - |
| | Tourist Based | | | | | |
| 1 | Ropeway/Cable car system | 60 | - | - | Bhalukpong to Dolomite in Rupa (3 Km) Pangin (10) | 20 Km of Rope way |
| | Regular and alternative Energy Resources Industries. | | | | | |
| 1 | Integrated soft coke come Power | 8000 | - | - | Niglok, Naorllung, | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Plant | | | | Changlang | |

MISC Industries

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Rubber Hawai Chappal Project | 15 | - | - | - | - |
| 2 | Activated Carbon | 750 | - | - | Eastern Sector | - |
| 3 | Cotton Knitwear | 50 | - | - | - | - |

*Source: TCS Study.*

### *2.4.14 Transportation.*

Road transportation is still the most important mode of movement of goods and materials in the state of Arunachal Pradesh. The entire road network of the state revolves round the two National Highways of 37 and 52, which pass through the Brahmaputra valley in Assam. NH-52 passes through Pasighat, Roing and Tezu and Joins NH-37 at Rupai (at about 20 Kms southward from Saikhowa Ghat), which is the last point of NH-37 in Assam. With the opening of Balipara – Bhalukpong meter gauge railway track, the state has been on the Railway map of the country recently. The major Government agencies, which have constructed various stretches of roads in the state, are PWD, BRTF, NEC, RWD and forest Department. Amongst all the North-Eastern states, Arunachal Pradesh ranks fifth in road length. The road density is lowest in Arunachal Pradesh, while the same is the highest in Tripura.

*Roads.*

The state of Arunachal Pradesh has a total length of 10240 km of roads, out of which 3692 Kms are surfaced. Highways have a total length of 9150 km, while the urban roads have a total length of 35 km and roads covered under various projects have total length of about 1055 km. The length of standard double lane National Highways has been found to be 271 Kms.

*Motor Vehicles*

The numbers of motor vehicles registered in the state of Arunachal Pradesh are provided in **Table 2.14** below.

Table: 2.14

Number of registered vehicles in the State

| Year | Two Wheeler | Cars | Taxi | Auto Rickshaw | Bus | Goods Vehicle | Tractor Trailer | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| 90-91 | 2822 | 1438 | 89 | 25 | 216 | 952 | 197 | 98 | 5837 |
| 91-92 | 3984 | 1770 | 91 | 47 | 250 | 1120 | 223 | 99 | 7584 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 92-93 | 5055 | 2175 | 98 | 90 | 332 | 1354 | 290 | 108 | 9502 |
| 93-94 | 5484 | 2333 | 100 | 131 | 363 | 1523 | 326 | 112 | 10372 |
| 94-95 | 7309 | 2888 | 205 | 215 | 503 | 2298 | 386 | 166 | 13970 |
| 95-96 | 7932 | 3682 | 291 | 403 | 725 | 3066 | 437 | 237 | 18573 |
| 96-97 | 12674 | 4486 | 389 | 796 | 796 | 3375 | 501 | 270 | 23273 |
| 97-98 | 14574 | 5420 | 453 | 881 | 869 | 3553 | 560 | 300 | 26630 |
| AGR (%) | 26.4 | 20.9 | 26.2 | 66.3 | 22.0 | 20.7 | 16.1 | 17.3 | 24.2 |

### *2.4.15 Tourism*

The state of Arunachal Pradesh has a number of fascinating tourist spots scattered all over the state. But due to inadequate facilities, only 173 foreign tourist and 3000 domestic tourists arrived during 1995-1996. The magnificent Buddhist Monastry at Tawang and Mythological Parasuramkund. Malinithan and Bhishmaknagar are quite popular centers of pilgrimage. The landscape and topography of the state offers ideal locations for developing mountaineering, trekking, adventure tourism, water sports, aero sports, rafting, gliding, and hiking, skiing as well as mere site seeing facilities.

### *2.4.16 Social Infrastructure.*

***Education***

There are a total number of 2012 educational institutions including teacher training and handicapped school. Most of these are run by the state government and the total expenditure is about Rs. 88.3 crores. There are only one state university and four art and science colleges located at Itanagar, Bomdila, Pasighat and Tezu. Higher secondary and secondary schools are enumerated at 154, while Middle schools are 301 in number.

***Health***

There are a total of 435 Allopathic institutions, 3 Ayurvedic and 29 Homeopathic clinics, run by the state government. In spite of best of efforts by the state government with provisions of registered medical and para-medical personnel (201 doctors, 207 midwives and 40 nurses) and of physical infrastructure like 1327 beds in rural areas and 1032 beds in urban areas, there is still a crying need to improve the medical facilities in the state.

***Housing***

Housing is an important parameter to assess the development of a society. The following figures on housing sector in the sector are provided in the following tables.

Table: 2.15

Distribution of Housing Units between Rural and Urban Areas

| Unit | Year | Urban | Rural | Total |
|---|---|---|---|---|
| No. of occupied residential housing | 1991 | 24733 | 135136 | 159869 |
| No. of households | 1991 | 25317 | 150131 | 175448 |
| No. of households per 100 occupied residential houses | 1981 | 102 | 116 | 115 |
| | 1991 | 102 | 111 | 110 |
| No. of persons per 100 households | 1981 | 425 | 513 | 506 |
| | 1991 | 437 | 502 | 493 |

Table: 2.16
Distribution of households by type of occupancy
(In percentage)

| Area | Owned | Hired | Others |
|---|---|---|---|
| Rural | 71.24 | 21.03 | 7.74 |
| Urban | 20.21 | 66.39 | 13.40 |
| Total | 63.67 | 27.75 | 8.85 |

Table: 2.17
Distribution of percentage of households having safe drinking Water, electricity and toilet facilities (1991)

| Area | Household with drinking water connection | Household with electric connection | Households with toilet facilities |
|---|---|---|---|
| Rural | 66.87 | 33.88 | 42.62 |
| Urban | 88.20 | 80.96 | 75.05 |
| Total | 70.02 | 40.85 | 47.42 |

### *2.4.17 Cooperative.*

In the state of Arunachal Pradesh, there are one credit and twenty eight (28) non-credit societies. Performance indicators of the co-operative societies of the state are given below (**Table 2.18**)

Table: 2.18
Performance indicators of Co-operative institutions (1991)

| Performance Indicator | Rs. (Lacs) |
|---|---|
| Share Capital | 91 |
| Reserve | 203 |
| Deposit | 5109 |

| | |
|---|---|
| Working Capital | 5915 |

### *2.4.18 Net State Domestic Product (NSDP)*

The NSDP at current prices has increased from Rs. 977 million in 1980-81 to Rs. 10791.9 million in 1996-97 registering a growth rate of 16.1 percent per annum. NSDP at constant prices has increased from Rs. 977 million to Rs. 3034.4 million during the same period thereby registering a growth rate of 7.3 percent. NSDP and per capita income of constant prices as well as current prices are given in **Table 2.19.**

Table: 2.19

Growth of Economy in the state (19801997)

| Item | 80-81 | 90-91 | 96-97 |
|---|---|---|---|
| NSDP at constant price (Rs million) | 977 | 2311.1 | 3034.4 |
| NSDP at current price (Rs million) | 977 | 4604.5 | 10791.7 |
| Per capita income at constant prices (Rs) | 1571 | 2709 | 3059 |
| Per capita income at current prices (Rs) | 1571 | 5398 | 10879 |

## 2.5 Socio Economic Profile of the immediate Project Influences Area.

### *2.5.1 General*

The Upper Subansiri district forms the immediate influence area of the project. The section of the chapter presents a brief socio-economic profile of the project influence area.

The Upper Subansiri District derives its name from the Subansiri River which meanders through the entire length of the district.Earlier; the entire area was a part of Lakhimpur district under Balipara Frontier Tract. In the year 1946, the Balipara Frontier Tract was divided into two administrative jurisdictions viz. Sela Sub Agency and Subansiri area. In 1954, the Subansiri area was renamed as Subansiri Frontier Division. This was renamed as Subansiri district in 1964, And subsequently into Lower and Upper Subansiri districts.

The entire region of the present Upper Subansiri district is mountainous with difficult and diverse terrains. The area is intersected by the mighty Subansiri River and its tributaries. The upper reaches of the district are snow bound with the altitudes ranging from 7000ft to 18000 feet consists of alpine forests with very thin or negligible middle belt of the district is characterized by humid temperate forests varying from 7000ft

to 3000ft.The lower belt comprises of evergreen rain forests with altitudes from 700ft to 3000ft.

The important wild life in the district comprise of Leopards,bears,musk deer,Hornbill,dove,owl etc.The district boasts many reserve forests mainly being Daporijo,Sigin,Dulom,Kamala,Maro,Bulo,Tasi,Rekom and Langsa.

The natural resources in the district like the rest of the state are yet to be explored. However existence of Lime stone, Graphite, Dolomite and Mica in abundance are confirmed.

The district is connected with 365 Kms long all weather road with Itanagar the state capital via the headquarter of Lower Subansiri district,Ziro. North Lakhimpur is an important commercial town connected by 298 Kms. roads. The nearest rail head is Silapathar in Dhemaji district of Assam which is connected to Daporijo by Akajan-Bame-Daporijo road of 235 Kms.

The district has 3 Higher Secondary Schools, 5 Secondary Schools, 27 Middle Schools and 70 Primary schools, 68 Adult Education centers and a single Government library.

On the Health front the district has 1 district hospital, 31 health units, 6 Public Health Centers and 24 Sub centers.

The district has been identified as one of the most backward districts of the country and necessary support is being provided under the **Rastriya Sam Vikas Yojana** of the Government of India.

### *2.5.2* The Upper Subansiri District *at a Glance.*

Some of the salient features of the Upper Subansiri district are presented here.

Table: 2.20
Summary of Upper Subansiri Districts

| Sl. No. | Subject | Upper Subansiri |
|---|---|---|
| 1 | Area in Sq km | 7032 Sq Kms |
| 2 | District boundary | China in North, West Siang and Lower Subansiri in East and South, Lower Subansiri in West. |
| 3 | District headquarter | Daporijo |
| 4 | Total annual rainfall | 1368 mm |
| 5 | No. of Administrative Sub-Division. | 2(Two) |
| 6 | No. of Administrative Circle | 13(Thirteen) |
| 7 | Number of blocks | 8(Eight) |
| 8 | No. of villages | 405(Four hundred five) |
| 9 | No. of Towns | 4(Four) |

### *2.5.3 Demographic Features.*

The total population of the district as per 2001 census is 54995 of which 11306 is the population below poverty line. Most of the population is scheduled tribe (43034) comprising of Tagins, Galos, Nyshis and Hill Miris.
There is no special economic activity in the district so far. The indigenous people practice subsistence agriculture.
The salient demographic features of the district is summarized below in **Table 2.2**

Table: 2.21

Salient Demographic Features of Upper Subansiri (2001)

| Sl.No. | Subject | Upper Subansiri |
|---|---|---|
| 1 | Total population | 54995 |
| 2 | Decadal growth rate | +9.80 |
| 3 | Population density (nos. per sq.km) | 8 |
| 4 | Sex Ratio | 973females/1000 males |
| 5 | Literacy rate (in %) | 50.89 |
| | | |

# CHAPTER-3: ROAD PROJECT CHARACTERISTICS

## *CHAPTER – 3.0*

## *PROJECT ROAD CHARACTERISTICS*

### 3.1 Introduction.

The project road starts at chainage 98.00km near Godak on BRO road which is connecting Daporijo, district headquarter of Upper Subansiri District. This proposed road length of 68.07 km passes through as many as 15 (Fifteen) villages viz. 1) Godak 2) Bopi 3) Laa 4) Puchigeko 5) Gami 6) Belak Muri 7) Muri 8) Mugli 9] Babla 10] Baja 11] Gigi. 12] Don 13 Daporijo 14] Sikarijo15] Dulom.

The brief account of the existing conditions of various aspects of the project road, as well as its deficiencies, as recorded by the survey team is stated below. The chainages mentioned here in are according to the proposed road alignment.

The total project length is 68.07 Km as indicated in the Table-1.1.The remaining road beyond the 166.07 km ,is the part of Trans Arunachal segment Daporijo to Bame to provide connectivity between Upper Subansiri and West Siang districts.

### 3.2 Climate.

The effects of seasonal variation i.e. winter and monsoon are pronounced in the districts of Upper Subansiri and West Siang, as well as the rest of the state. Winter has been found to be prominent from the month of December to January. Monsoon is quite intense from June to September, accounting for about 87% of the average annual rainfall. However light to medium shower continues throughout a major part of the rest of the year.

Average monthly temperature at Upper Subansiri has been found to vary from 7 $^0$ to 36 $^0$ C and the average monthly rainfall in the district is found to vary from 26mm per month to 1787 mm per month.

The period of monsoon is not favorable to the construction activities in the state. The official working season, as considered by Public Works Department, is from October to May, which does not include the period of monsoon.

### 3.3 Terrain and Land use.

#### *3.3.1 Terrain*

The summary of types of terrain observed along the entire project stretch is provided in the table below:

Table: 3.1
Summary of Types of Terrain

| Existing Chainage | Type of terrain |
|---|---|
| From 98.00 km 0.0 to166.07 km | Hilly Terrain |

A major portion of road passes through Agricultural and barren areas with a few village and settlement enroute.

## 3.4 Cross sectional elements.

### *3.4.1 General*

Width and type of cross sectional elements have been found to vary along the existing alignment.

Black top surface has been observed for the entire length of the proposed road i.e. 68.07km length. Inadequacy of width of shoulder, carriageway and roadway width have been found almost along the entire alignment.

The carriageway in bituminous is a single lane facility ranging in width from 3.50 m to 3.80 m.

### *3.4.2 Conditions*

Pavement

The condition of the existing pavement varies fair to poor. The nature of distress took place in cracked and raveled surface, rutting to pot holes. More than 75% of the black top surface in the entire road section is raveled to the extent Edge failure and rutted surface is also very common especially in bituminous carriageways.

Shoulder and embankment

Condition of earthen shoulder has been found to be poor for most of the road section.

Drainage

The existing bituminous road does not have adequate drainage provisions, when leads to accumulation of rainwater on the carriageway, leading to deterioration of pavement. The condition is further aggravated either by absence of inadequacy of camber or chocking of side drains.

Out of the total length of 68.07 km, drains exist for a length of about 25 km (65%) condition of these drains are poor for most of the length, which affects conditions of pavement surface.

## 3.5 Geometrics

The existing alignment has a large number of sharp/ sub-standard curves and hairpin bands.

Out of the entire length of 68.07km of the existing project road, about 90% length of the entire alignment has a ruling gradient.

## 3.6 Right of Way

The road alignment passes through rural areas except Daporijo. No centralized official record of ownership of land abutting the road was available to the department.

It is assumed that 15m of land width is available on both sides from the center of the road. The proposed 30 m strip forming the right of way is available in both the plain as well as hilly stretches. However land acquisition for this purpose is to be got regularized from the competent authority. Temporary structures, including some residential as well as commercial structures, wet cultivation, and horticulture garden have been found within ROW (along and across the alignment) at some isolated stretches.

## 3.7 Geology and Soil

The geological setup in Godak to Subansiri Bridge Road section falls in the Lower Himalaya of Upper Subansiri Siang districts of Arunachal Pradesh. Geologically the area is complex from the point of view of stratigraphic position of the different rock units, structural evolution and varied rock types. The area lying in the Lower Himalaya comprises a usually steep hill slope. River subansiri is the most important basin in the district.

The varied geographic units and rock types (both sedimentary and metamorphic) along with equality complex vegetative covers have lead to the development of variety of soils like alluvial, tarai, sub-montane, red lorry etc. the area predominantly comes under sub-montane and brown, red and yellow soils. Tarai, red, brown and yellow and older alluvium is found in area. The plain is actually composed of collavia – alluvial wash material and constitute composite fan plains.

## 3.8 Structures.

### *3.8.1 Culverts, bridges and Causeways.*

There are 489nos. of existing culverts along the project road. Out of these 1 m span culvert are 365nos. All culvert shall be of are box culverts, besides the above, 7

nos. bridges exist along the project road. All existing Culverts and Bridges have been reported to be constructed more than Four decades ago.

Chikne nallah at109.72km

Gae Nallah at 118.72km

sibe Nallah at 121.23km

Mate nallah at 138.25km

Segin nallah at160.01km

siyin nallah at 162.90

Subansiri at 166.07km

### *3.8.2 Retaining Wall / Breast Wall.*

There are a few retaining structures at different locations along the road, in order to protect the road or the hill at the roadside. The details of retaining wall and breast wall are prescribed in Chapter 4.0. The total length of retaining wall has been found to be 618m and the total length of breast wall is 736.00 m.

## 3.9 Existing Utilities.

Three types of utilities, i.e. electric line, Power Grid Towers, water supply line and telephone cables have been observed along the project road alignment.

### 3.10 Road Furniture.

The existing road furniture is limited to kilometer stones and markings on some of the existing culverts and bridges. Otherwise, the entire stretch lacks road marking and signs and kerb/object markings.

### 3.11 Safety Appurtenances

The standard safety appurtenances along the hill roads, such as, cautionary signs and warning signs, pedestrian guard rails, crash barriers/ rail posts have not been found adequately along the project stretch.

### 3.12 Passenger Amenities.

Two types of passenger amenities, shelter at bus stops (20.) have been observed along the project alignment. Judging by the type and distribution of terrain and lack of alternative modes of transport (other than road) in the project surroundings, the number seems to be inadequate.

### 4.14 landslide Zone

Land slide zone has been observed along the project alignment in many places i.e. from Godak to Subansiri bridge point

### 3.13 Project Road Deficiencies.

The deficiencies of the project road, as summarized from the condition survey noted above are provided briefly in **Table 3.2.**

Table: 3.2
Project Road Deficiencies and Improvements Required.

| Sl. No. | Deficiencies | Improvement Required. |
|---|---|---|
| 1 | Inadequate road width (mostly single lane of MDR standard) | Widening to double lane width of NH standard. |
| 2 | Existing road condition poor to fair and structurally inadequate. | Strengthening of pavements to cater to expected traffic loading. |
| 3 | Existing shoulders functionally and structurally | • 1.90m wide hard shoulder and 0.6m parapet in |

| | | |
|---|---|---|
| | inadequate. | valley side.<br>• 1.6m wide hard shoulder and 0.3m wide earthen cushion &0.6m wide side drain in hilly side. |
| 4 | Existing sharp curves | Easement of horizontal alignment possible to the practical extent proposed. |
| 5 | Existing terminal intersections are not in proper shape | Junction improvement suggested improving in geometrics and easy flow of turning traffic. |
| 6 | Inadequate road furniture and safety appurtenances. | Proposed in adequate numbers. |
| 7 | Absence<br>a) Bus bays in adequate number | Bus bays have been considered necessary near all existing and proposed bus stops. |
| | b) Passenger shelter in adequate number | Cost effective and low maintenance structures have been suggested at all existing and proposed bus stops. |

# CHAPTER-4: SURVEY, INVESTIGATIONS & DATA COLLECTIONS

## *CHAPTER – 4.0*

## *SURVEY, INVESTIGATIONS AND DATA COLLECTION*

### 4.1 General

The existing Godak-Daporijo road is mostly a single lane facility, which is proposed to be strengthened and widened to a double lane of National Highway width with appropriate hard and earthen shoulders.

The broad methodology, based on the pre-feasibility study for Trans-Arunachal Highway as Terms of Reference (TOR) of the Ministry of Shipping, Road Transport and Highways, Government of India's letter No.12037/7/ 2008/Ar.P.NH-10 Dtd 4/2/2008 is described in brief in the following sections.

### 4.2 Field surveys and Investigations.

In order to obtain a complete appreciation of the existing features of the project road, the following field survey and investigations were carried out.

a) Road Inventory.
b) Road Condition survey.
c) Inventory and Condition survey of bridges, culverts and other structures.
d) Pavement and material investigations on quarry

Data on socio-economic conditions of the state and the concerned districts were also collected from secondary sources. The socio-economic scenario of the area has been presented in **Chapter 2.0.**

### 4.3 Chainage and Reference system.

The 68.07 km long project road starts from Godak to Subansiri bridge point will connect Daporijo, and join Daporijo –Bame road across Subansiri Bridge near Daporijo, to provide connectivity between Upper Subansiri and West Siang Districts.

All field works and investigation works (except the topographic survey) were carried out with respect to the existing 'km' stones. In general, chainage was done along the LHS of the existing road to avoid any mishap and delay; these chainages may not tally with the topographic survey details especially in hilly stretches, where continuous sharp curves and hair pin bends exist.

## 4.4 Road Inventory survey.

Road inventory survey has been carried out at every 50 m intervals along the existing project road to collect the following information:

- Terrain (Plain/ rolling/ Hilly)
- Land use (agriculture, barren etc)
- Carriageway type (BT/WBM/Earth/Concrete) and width.
- Drains on left and right hand side
- Vertical and horizontal curves numbers.
- Cross roads on left and right hand side (junctions)
- Major and minor junctions.
- Landslide zones.

The details of utilities and roadside amenities were also collected and compiled. The following utilities and roadside amenities were surveyed:

Utilities:

- Electric poles/towers with line (including crossings)
- Water supply line (including crossings)
- Telephone posts with lines (including crossings)
- HT/LT lines (including crossings)
- Power substations.
- OFC Cable being laid along the shoulder edge on valley side, but within the shoulder width.

Roadside amenities:

- Passenger shelters at bus stops.
- Tea stall/ small restaurants.
- Taps

The summary of data (provided in Appendix IV) is provided below (Table **4.1)**:

Table: 4.1
Summary of data roadway and carriageway

| Item | Godak-Daporijo Road. |
|---|---|
| Average roadway width | 6.00 m |
| Black Top surface | 68.07 Km |
| Average width of carriageway | 3.50 m |
| Average width of black top surface | 3.50 m |

The data indicates that the project road has deficient width of cross section in the hilly stretches which need widening and up gradation, as well as for attaining the safety standard.

Black top surface has been found to be present for 100% of the section between Godak to subansiri bride point. The entire road stretch has been found to have no embankment.

Entire stretch was found to have earthen shoulder and width varies between 0.5m to 1.0m. Average shoulder width was found to be lesser than the minimum with respect to the stipulations in the relevant IS/IRC codes.

Road Inventory data also include information on utilities, intersections and passenger amenities. The summary has been presented in **Appendix -IV**

## 4.5 Road Condition Survey.

For evaluating the performance of existing pavement surface information regarding rut depth, raveling, type and area of cracks, carriageway edge fretting, areas under patch repair and shoulder conditions were collected by making visual observation at 100.0 m intervals along the existing road. In addition to these the type and condition of roadside drainage were also noted. The features considered in condition survey include the following:

i) Surface type
ii) Pavement condition including
- Cracking (type and area)
- Raveling (area)
- Potholes (area)
- Area under patch repair
- Edge failure (length)
- Rut depth (depth)

iii) Shoulder
- Condition

iv) Roadside drainage (on LHS & RHS)
- Condition

v) Type and condition of embankment on both sides.

Two types of cracking were recorded viz less than or equal to 3 mm and more than 3 mm. The format for such data collection was presented in Chapter 4 of Inception Report. The detailed data on conditions of carriageway, shoulder, embankment and drainage have been provided. It is observed that about 68.07 km of the project road is bituminous, having poor surface condition.

The condition of earthen shoulder has been found to be poor for the most of the stretch of the road.

The condition of road side drains are poor for most of the length, which leads to poor conditions of pavement surface, wherever available.

## 4.6 Inventory and condition survey of culverts, Causeways and other Structures

Inventory & condition survey of existing culverts and retaining structures were carried out to assess the hydraulic & structural adequacies of existing structure/culverts. During the above survey, the following dimensional parameters were measured to check the functional & structural adequacies.

There are 489 nos. of existing culverts along the project road. All are R.C.C Box type Culvert. Besides the above, 7 nos. bridges exist along the project road.

In general, Span of RCC slab culverts vary from 0.60 m to 6 m. Abutments and Return- walls are stone masonry type. Large slab culverts are functionally effective in general. Whole total culverts are of lower specification of 40R which will require to be replaced by higher specification of 70R standard. The above figures are based on study of the hydraulic and structural adequacy of existing structures without considering the geometric improvements at the inventory stage.

Proposal for improvement of culverts, considering structural and hydraulic adequacies as well as geometric improvements, are prescribed stretch-wise in **Chapter 5.0.** Such improvement proposals have been framed based on the site inspection, interaction with the department and proposed geometric improvements.

Inventory of existing retaining wall / Breast wall at sides of road were carried out during inventory of road & structures. The details of type, length, location, condition of existing retaining wall / Breast wall were assessed. Total length of retaining wall and breast wall approximately are 618 and 736 m respectively.

## *4.7 Composition of Existing Pavement.*

The entire length of 68.07Km is bituminous layer of premixed carpeted road and the existing pavement composition comprises of sand and gravel of 100 to 200 mm and about 100mm thickness of

WBM as base course surfaced with bituminous layer of pre-mixed carpet.

## 4.8 Material Investigation.

Mainly two numbers of Quarries have been identified for the construction materials like sand, shingle and boulders etc. where materials are abundantly available throughout the year are as below:-

| Sl. No. | Name of quarry location | Approx lead to the project road. |
|---|---|---|
| *1* | *Muri* | *(30 km from Quarry to Mid point of project road.* |
| *2* | *Dong* | *(15 km from Quarry to Mid point of project road.* |
| *3* | *Sigen* | *(5 km from Quarry to Mid point of project road.* |

# CHAPTER-5: IMPROVEMENT PROPOSALS

## *CHAPTER – 5.0*

## *IMPROVEMENT PROPOSALS,*

It is proposed to improve the existing MDR standard road to a double lane road with NH standard (with 7.00m wide carriageway), abutted by hard shoulder of 1.90 m and parapet 0.6 m on valley side for plain/rolling and hard shoulder of 1.60 m, cushion-0.30m and side drain-0.60m on hilly side for plain/rolling terrain respectively. The reaches of hilly terrain will be provided with parapet wall on the valley side and paved drain on the hillside. Unpaved drains have also been provided in the plain/rolling terrain. Appropriate protective works like masonry with grassing on cut slopes on hills retaining walls and breast walls have been provided. Safety provisions and traffic aid like traffic signs, guard posts, distance stones road delineators and reflectors have been provided.

**5.01** **Pavement:** The existing pavement is of flexible pavement with bituminous wearing course. The condition of the existing road pavement is generally poor. In a few stretches the pavement has been damaged due to crack, and depressions ruts. Existing pavement composition comprises of sand and gravel of 100 to 200 mm and about 100mm of WBM as base course surfaced with bituminous layer of pre mixed carpet.

Pavement design shall be based on guidelines as per IRC: 37-2001 and IRC: 81 – 1997 for flexible pavement, both for widening and new construction.

Granular materials conforming to clause 401 of MoRT & H specifications of road and bridge work with liquid limit and plasticity index of not more than 25 and 6 respectively and CBR not less than 25% with minimum thickness of 250mm has been considered.

For heavily trafficked roads, use of wet mix macadam (WMM) base has been selected. Pavement composition for widening / new construction of project road is given as under.

Crust Composition for New Pavement.

| | | |
|---|---|---|
| GSB | | 250 mm |
| WMM | | 325mm |
| DBM | | 60mm |
| BC | | 40mm |
| | Total: | 675 mm |

**5.02 <u>Road:</u>** The total length of the road is 68.07 km. The highway design shall be based on following IRC Codes and publications in conformity with requirements set forth in MoRT&H specifications.

| Sl. No. | Description | Design Code/Standard | |
|---|---|---|---|
| 1 | Geometric designs and standards | i) | IRC: 38:1988 Guideline for design of horizontal curves. |
| | | ii) | IRC: SP-23:1993 – Vertical Curves. |
| | | iii) | IRC:52:1981 – Geometric design of hill roads |
| | | iv) | IRC: 54:1974 – Lateral & vertical clearances at under passes for vehicular traffic. |
| | | v) | IRC: 64:1990 – Capacity of roads in rural areas. |
| | | vi) | IRC: 66:1976 – Site distance on rural highways. |
| | | vii) | IRC: 73:1980 – Geometric designs standard of rural highways. |
| | | viii) | IRC: 86:1983 – Geometric designs standard for Urban Roads in Plains. |

The road shall have following standards:

i) Formation Width – 12.00 meters.
ii) Carriageway – 7.00 meters.
iii) Shoulders – 1.90 meter } (Valley Side)
iv) Parapet – 0.60 meter. }
v) Shoulders – 1.60 meter. }
vi) Cushion – 0.30 meter. } (Hill Side)
vii) Side Drain – 0.60 meter. }

**5.03: <u>Bridges:</u>** The total number of existing bridge is and 7(seven) and there will be no re-alignment of road. All these existing bridges are proposed to be replaced with new bridges of as per IRC: 6-2000.

The design of bridges shall be based on IRC: SP-13- 2004 – Guidelines for design of small bridges and culverts and design loading shall be as per IRC: 6- 2000.

The width of bridge shall be 12 meters and carriageway with footpath shall be 11 meters.

## 5.04 PROTECTION WORKS.

**5.04.1** **Retaining Wall**: In smaller stretches, the earth fill in foundation width on valley side needs to be retained from slippage and in valley point water flows over the road. To achieve requisite formation width when cutting into hill side is not economical or has to be restricted, due to hard rocky strata or other reasons. To some extent, the provision of retaining walls, protect the road formation. Provisions of retaining walls are made with or without gabion walls. The tentative locations are attached.

**5.04.2** **Breast Wall** : In hill section, where widening is proposed on hill side, breast walls are proposed, in such sections where the hill side strata or soft flowing for protection against instability. The breast walls are conventionally proposed in stone Gabion construction. The average height of the walls is proposed to be 3m. Gabion wall construction is most suitable for unstable situations, which have the advantage of flexibility in drainage from the hill strata behind and rebuilding in case of failure. The Gabion breast walls shall be stepped, with slope of 1:4 to 1:3.

The breast wall shall:

i) Keep the road edge defined and protect the drain.
ii) Protect the hill slope from slips.
iii) Would not allow continually flow of soil mass during slide.
iv) Assist in drainage from hill slop.

The provision of these is proposed as per guidelines given in "IRC SP: 48-1988". The sections where the breast walls are proposed is tentative and is subject to variation depending upon strata met in hill side cut. The tentative locations are attached.

### 5.04. 3 Parapets / Edge stones/ Delineators.

i) Parapets on retaining walls are proposed in same specifications as that for retaining walls. The parapet shall be 0.6m in width and 0.6 m in height above the road level.
ii) Edge stones / Delineators: Where the road is extra wide or is through cut the road way is demarcated / delineated by edge stones on drain side and delineators on valley sides. Delineators are proposed at every 100m interval opposite 200 m stone and km stone in addition to the curves and vulnerable locations.

# CHAPTER-6: COST ESTIMATE

## *CHAPTER – 6.0*

## *COST ESTIMATE.*

### 6.1 General

The bill of quantities and cost estimate will follow "Arunachal Pradesh Schedule of Rates 2007" (APSR 2007). The project cost estimates have been made considering the various items of works associated with identified improvements.

### 6.2 Cost Estimates.

The process of cost estimation involved the following steps:

- Estimation of quantities of cut and fill and other road components are calculated by manual calculations.
- Estimation of quantities of structures (except bridges) including rehabilitation proposals.
- Provision for shifting of utilities.
- Allowances 3% contingencies and 20% of project cost as cost escalation.
- Cost estimate is inclusive of the re-aligned road portion.

### 6.3 Components of Estimate.

The broad components of the estimate have been worked out under the following sub heads:

i) Site clearance and dismantling.

ii) Earthwork.

iii) Granular base sub-base.

iv) Pavement courses.

v) Culverts, causeways and protective works.

vi) Drainage.

vii) Traffic signs, marking and other appurtenances.

viii) Miscellaneous items.

ix) Providing for shifting of utilities

### 6.4 Unit Rates.

Generally unit rate per Km are worked out by adopting from Arunachal Pradesh Schedule of Rates (Roads & Bridges) – year 2007 for the different items of works like road formation, pavement etc.

### 6.5 Summary of Cost Estimates.

The summary of the estimates is as follows:

| | |
|---|---|
| The estimated total cost Of the entire project: | Rs. 322.42 Crores. |
| The estimated total cost Per km: | Rs. 473.67 Lakhs. |

## GENERAL COST ESTIMATE

**Name of work: Trans Arunachal Highway**
**Segment: Godak to subansiri bridge point (68.07)**

| Sl.No. | Description of Item | | Amount in Lakhs | Remarks |
|---|---|---|---|---|
| 1 | 2 | | 3 | 4 |
| I) | Total of cost estimate ( General abstract - I) | Rs. | 25,232.80 | **"A"** |
| II) | 7 year maintenance cost @ 3% on "A" | Rs. | 756.98 | |
| | **Total of I & II** | **Rs.** | **25,989.78** | **"B"** |
| III) | **Contingency** | | | |
| a) | Escalation cost of men and materials @ 20% of the project cost. | Rs. | 5,197.96 | |
| b) | Physical contingency allowance @ 3% on " B | Rs. | 779.69 | |
| | **Total of III** | **Rs.** | **5,977.65** | **"C"** |
| IV) | **Contract Preparation Cost** | | | |
| a) | Environment mitigation measure costs. | Rs. | 65.00 | **L.S** |
| b) | Service Re-location allowance. | | | |
| | i) Rehabilation & Re-settlement | Rs. | 100.00 | **L.S** |
| | ii) Shifting of utilities | Rs. | 45.00 | **L.S** |
| c) | Land acquisition allowance | Rs. | 65.00 | **L.S** |
| | **Total of IV** | **Rs.** | **275.00** | **"D"** |
| | **Grand Total (B + C + D)** | **Rs.** | **32,242.43** | |
| | **Say** | **Rs.** | **322.42** | **Crores.** |
| | **Cost Per Km.** | **Rs.** | **473.67** | **Lakhs.** |

# GENERAL ABSTRACT

**Name of work: Trans Arunachal Highway**

***Sagment:-*** **Godak to subansiri bridge point (68.07)**

| Sl.No. | Description of Item | | Amount in( Rs.) | | Remarks |
|---|---|---|---|---|---|
| 1 | 2 | | 3 | | 4 |
| | | | | | |
| 1 | General Provisions - | Rs. | 1,28,17,500.00 | | ( Annexure - I) |
| 2 | Site Clearance | Rs. | 58,96,915.00 | | ( Annexure - II) |
| 3 | Earth Work | Rs. | 80,21,66,081.50 | | ( Annexure - III) |
| 4 | Pavement | Rs. | 87,53,62,714.00 | | ( Annexure - IV) |
| 5 | C/D Structure | Rs. | 27,66,18,000.00 | | ( Annexure - V) |
| 6 | Bridges | Rs. | 34,81,50,000.00 | | ( Annexure - VI) |
| 7 | Drainage | Rs. | 8,53,36,846.29 | | ( Annexure - VII) |
| 8 | Protection work ( RW,BW) | Rs. | 2,02,83,030.00 | | ( Annexure - VIII) |
| 9 | Traffic Sign Km Stone etc. | Rs. | 9,66,48,719.00 | | ( Annexure - IX) |
| | **Total** | **Rs.** | 2,52,32,79,805.79 | | |

**Rs. 25,232.80 Lakhs**

# GENERAL PROVISION

**ANNEXURE - I**

**Name of work: Trans Arunachal Highway**

**Segment: Godak to subansiri bridge point (68.07)**

| Sl.No. | | Description of Item | Unit | Estimated Qnty | Rate ( in Rs.) | Total Amount ( in Rs.) | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | | | | |
| **1.01** | a) | Construction and providing 100 Sqm base office for the employer and his staff complete as per Technical Specification Clause 120, along with all furniture etc. detailed therein. | Each | 1.00 | 9,00,000.00 | 9,00,000.00 | |
| | b) | Salvage value of furniture & Equipment detailed in Technical specification Clause 120 | L.S | | | 4,00,000.00 | |
| | c) | Maintenance of Base Office & its furniture & equipment | Month | 73.00 | 10,000.00 | 7,30,000.00 | |
| **1.02** | | **Communications** | | | | | |
| | a) | Providing and commissioning cellular phones of standard make such as " Nokia" for employer complete as per Technical Specification Clause 123 | Each | 7.00 | 10,000.00 | 70,000.00 | |
| | b) | Maintenance cellular phones for the employer complete as per Technical Specification Claus 123 | Month | 129.00 | 1,000.00 | 1,29,000.00 | |
| | c) | Providing and maintenance a fax machine for the employer, including operable telephone line | Month | 129.00 | 500.00 | 64,500.00 | |
| **1.03** | | Providing and maintenance vehicles for the employer including drive, POL etc. complete as per Technical Specification Clause 124 | | | | | |
| | a) | Saloon Car | Veh days | 73.00 | 40,000.00 | 29,20,000.00 | |
| | b) | Hard top 4 wheel drive | Veh days | 129.00 | 40,000.00 | 51,60,000.00 | |
| **1.04** | | Supply of colour record photographs with negatives and two colour prints in size ( 6" * 4") there from mounted in album as per Technical Specification Clause 125 | No | 1800.00 | 60.00 | 1,08,000.00 | |
| **1.05** | | Supply of additional prints ( 24" * 48") of coloured photographs of approved size as per Technical Specification Clause 125 | No | 1800 | 20.00 | 36,000.00 | |
| **1.06** | | Supply of colour digital camera | No | 4 | 15,000.00 | 60,000.00 | |
| **1.07** | | Supply of labtops | No | 4 | 60,000.00 | 2,40,000.00 | |
| **1.08** | | Supply of GPS Altimetar, Total station and other survey equipments. | No | LS | 20,00,000.00 | 20,00,000.00 | |
| | | | | | **Total** | **1,28,17,500.00** | |

# SITE CLEARANCE

**ANNEXURE - II**

**Name of work: Trans Arunachal Highway**

**Segment: Godak to subansiri bridge point (68.07)**

| Sl.No. | | Description of Item | No | L | B | D | Qty | Rate | Unit | Amount |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | | | | | | | | | | |
| **1.00** | | Clearing jungle i/c uprooting of rank vegetation…….. | | | | | | | | |
| | a) | Existing Road - ( 98.00-166.07km) | 1 | 67180.00 | 15.00 | - | 1007700 | | | |
| | | | | | | | **1007700.00** | 4.50 | Sqm. | 45,34,650.00 |
| **2.00** | | Felling trees of girth…….. | | | | | | | | |
| | **A)** | **300 - 600** | | | | | | | | |
| | a) | Existing Road - ( 98.00- | 1 | 200.00 | - | - | 200.00 | | | |
| | | | | | | | | | | |
| | | | | | | | **200.00** | 143.00 | Each | 28,600.00 |
| | | | | | | | | | | |
| | **B)** | **Girth - 600 -900** | - | 625.00 | - | - | 200.00 | 282.00 | Each | 56,400.00 |
| | **C)** | **Grith - 900 -1800** | - | 230.00 | - | - | 1404.00 | 510.00 | Each | 7,16,040.00 |
| **3.00** | | Sacrifying existing bitumen surface | 1 | 34856.40 | 3.75 | - | 130711.50 | 5.00 | Sqm. | 6,53,557.50 |
| **4.00** | | Dismantaling existing and pavement i/c disposal of resulting materials & salvaging useful materials. | | | | | | | | |
| | a) | GSB | 1 | - | - | - | - | 269.00 | Cum. | - |
| | b) | Stone masonry /mortar | 1 | - | - | - | 12884.00 | 194.00 | Cum. | 24,99,496.00 |
| | c) | Dry stone masonars | 1 | - | - | - | 2557.00 | 153.00 | Cum. | 3,91,221.00 |
| | d) | Guard stone/KM Stone | 1 | - | - | - | 80.00 | 127.00 | Cum. | 10,160.00 |
| | e) | Plaster cement concrete structure | 1 | - | - | - | 357.00 | 441.00 | Cum. | 1,57,437.00 |
| | f) | RCC i/c reinforecement | 1 | - | - | - | 2532.00 | 705.00 | Cum. | 17,85,060.00 |
| | g) | Steel work in all type | 1 | - | - | - | 53.00 | 835.00 | MT | 44,255.00 |
| | h) | Hume pipe of any class | | | | | | | | |
| | | i) 600 - 900 | 1 | 0.00 | - | - | 13.00 | 3.00 | Mtr | 39.00 |
| | i) | Removal of RCC Railing | 1 | 0.00 | - | - | 0.00 | 231.00 | Mtr. | - |
| | | | | | | | | | | **1,08,76,915.50** |
| | | | | | | | | | | |
| **5.00** | | Rebate towards | | | | | | | | |
| | a) | Stone masonry - | 1 | - | - | - | 12884.00 | 252.00 | Cum. **( - )** | (32,46,768.00) |
| | b) | By rubble masonry | 1 | - | - | - | 2557.00 | 469.00 | Cum. **( - )** | (11,99,233.00) |
| | c) | Guard stone | 1 | - | - | - | 80.00 | 50.00 | Cum. **( - )** | (4,000.00) |
| | d) | RCC Steel | 1 | - | - | - | 53.00 | 10000.00 | MT. **( - )** | (5,30,000.00) |
| | | | | | | | | | | **58,96,914.50** |

**Say Rs. 58,96,915.00**

## ABSTRACT OF COST (EARTH WORK)

**ANNEXURE-III**

**Name of work: Trans Arunachal Highway**

**Segment:** **Godak to subansiri bridge point (68.07 km.)**

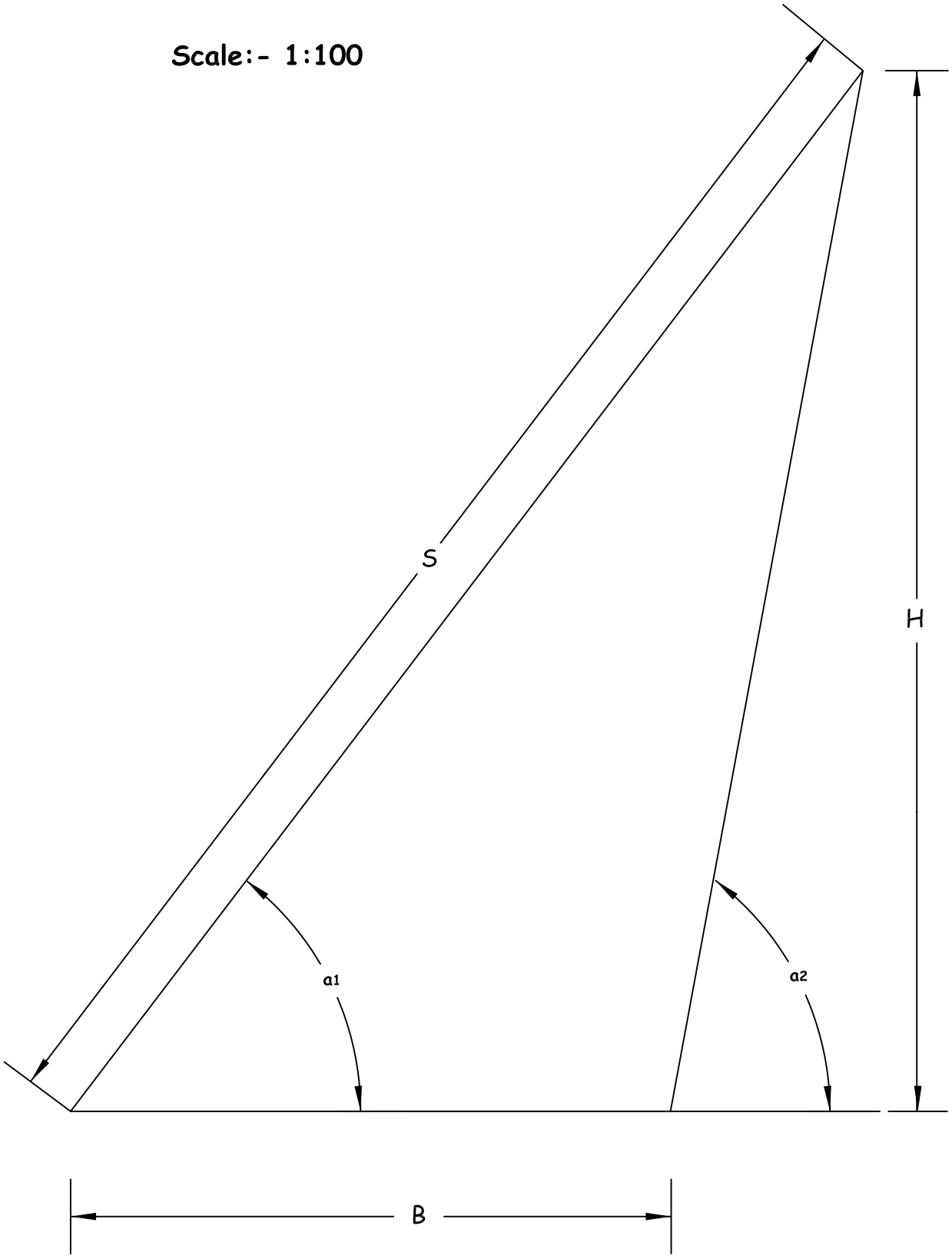
| Sl.No. | | Description of Item | Qty | Unit | Rate | Amount |
|---|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | 5 | 6 |
| 1 | | Earth work in Excavation by mechanical means..... | | | | |
| | a) | Ordinary soil | 20,60,786.00 | Cum. | 197.00 | 40,59,74,842.00 |
| | b) | Ordinary Rock | 10,10,393.00 | Cum. | 303.00 | 30,61,49,079.00 |
| | c) | Hard rock (blasting) | 3,69,783.00 | Cum. | 361.00 | 13,34,91,663.00 |
| 2 | | Rebate towards rock materials obtained from blasted rock - Qty. - 50% of H/rock | 1,84,891.50 | Cum. **( - )** | 235.00 | (4,34,49,502.50) |
| | | | | | | **80,21,66,081.50** |

## SCHEDULE OF QUANTITY (EARTH WORK)

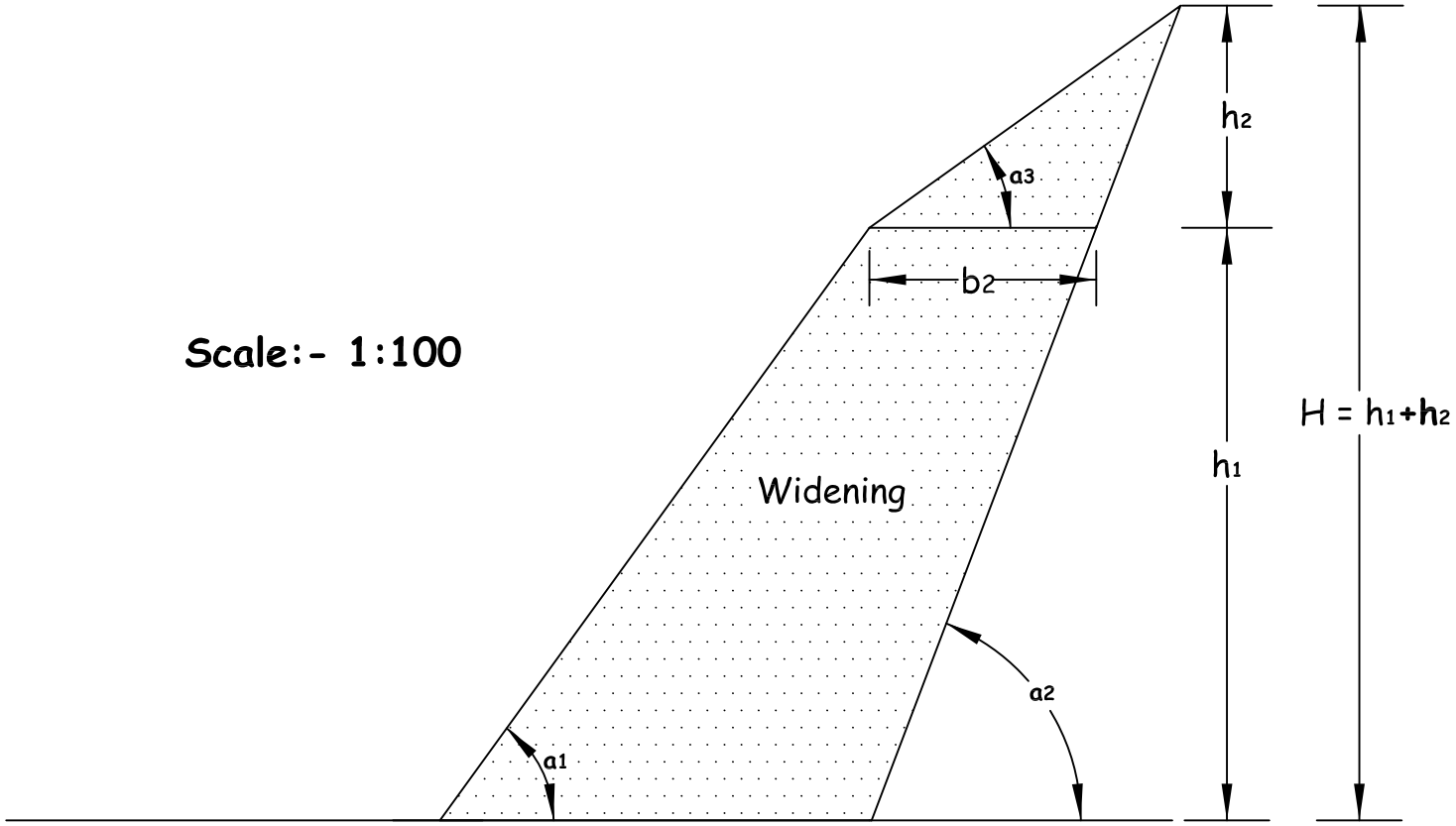
| Sl.No. | | Description of Item | Ordinary Soil | Ordinary Roak | Hard Rock |
|---|---|---|---|---|---|
| 1 | | 2 | 3 | 4 | 5 |
| a) | | Existing road 98.00-166.07 km | 20,60,786.00 | 10,10,393.00 | 3,69,783.00 |
| | | | | | |
| | | **Total** | **20,60,786.00** | **10,10,393.00** | **3,69,783.00** |

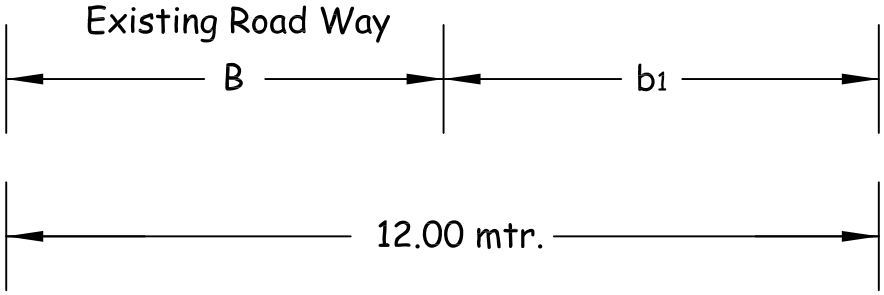
# TYPICAL X-SECTION FOR CALCULATION OF EARTHWORK
## [(By-Pass (FC)]

Scale:- 1:100



# TYPICAL CROSS-SECTION FOR CALCULATION OF EARTHWORK (WIDENING)



ABSTRACT OF COST OF PAVEMENT

Name of Work:- TRANS Arunachal Highway ANNEXURE -IV

**Segment: - Godak to subansiri bridge point (68.07 km.)**

| Sl.No. | Description of Item | No | L | B | D | Qty | Rate | Unit | Amount (in Rs.) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | | | | | | | | | |
| | SUB-BASE & BASE COURSE | | | | | | | | |
| | Widening portion of existing road | | | | | | | | |
| 1 | Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401 ) for grading- II Material | 1 | 67,180.00 | 6.75 | 0.25 | 1,13,366.25 | 1,721.00 | Cum | 19,51,03,316.25 |
| 2 | Wet Mix Macadam (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)<br>Two layers of 162.5mm thick. | 1 | 67,180.00 | 7.00 | 0.325 | 1,52,834.50 | 1,412.00 | Cum | 21,58,02,314.00 |
| | BITUMENOUS PAVEMENT | | | | | | | | |
| 3 | Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.) | 1 | 67,180.00 | 7.00 | - | 4,70,260.00 | 29.00 | Sqm. | 1,36,37,540.00 |
| 4 | Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom. | 1 | 67,180.00 | 7.00 | - | 4,70,260.00 | 11.00 | Sqm. | 51,72,860.00 |
| 5 | Dense Graded Bituminous Macadam (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.) | 1 | 67,180.00 | 7.00 | 0.060 | 28,215.60 | 8,213.00 | Cum | 23,17,34,722.80 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 | **Bituminous Concrete** (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects) | 1 | 67,180.00 | 7.00 | 0.040 | 18,810.40 | 9,156.00 | Cum | 17,22,28,022.40 |

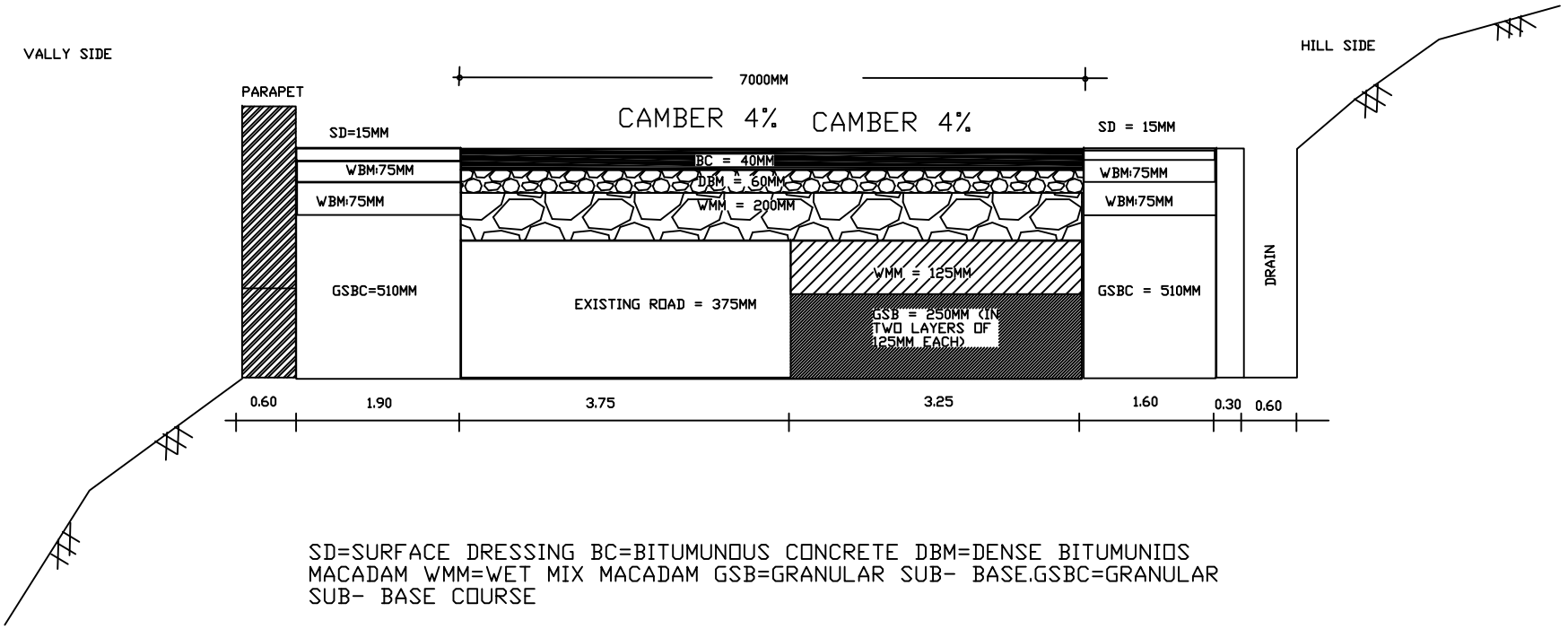
| | |
|---|---|
| | 83,36,78,775.45 |
| Add 5% for curves & Junction on Item 1 - 6 | 4,16,83,938.77 |
| | 87,53,62,714.22 |
| Say Rs. | 87,53,62,714.00 |

# TRANS ARUNACHAL HIGHWAY

SEGMENT:- BAME TO TAI-38.43KM

**TOTAL FORMATION WIDTH = 12.00METRES**

ALL DIMENSIONS ARE IN MM




SD=SURFACE DRESSING BC=BITUMUNOUS CONCRETE DBM=DENSE BITUMUNIOS MACADAM WMM=WET MIX MACADAM GSB=GRANULAR SUB- BASE.GSBC=GRANULAR SUB- BASE COURSE

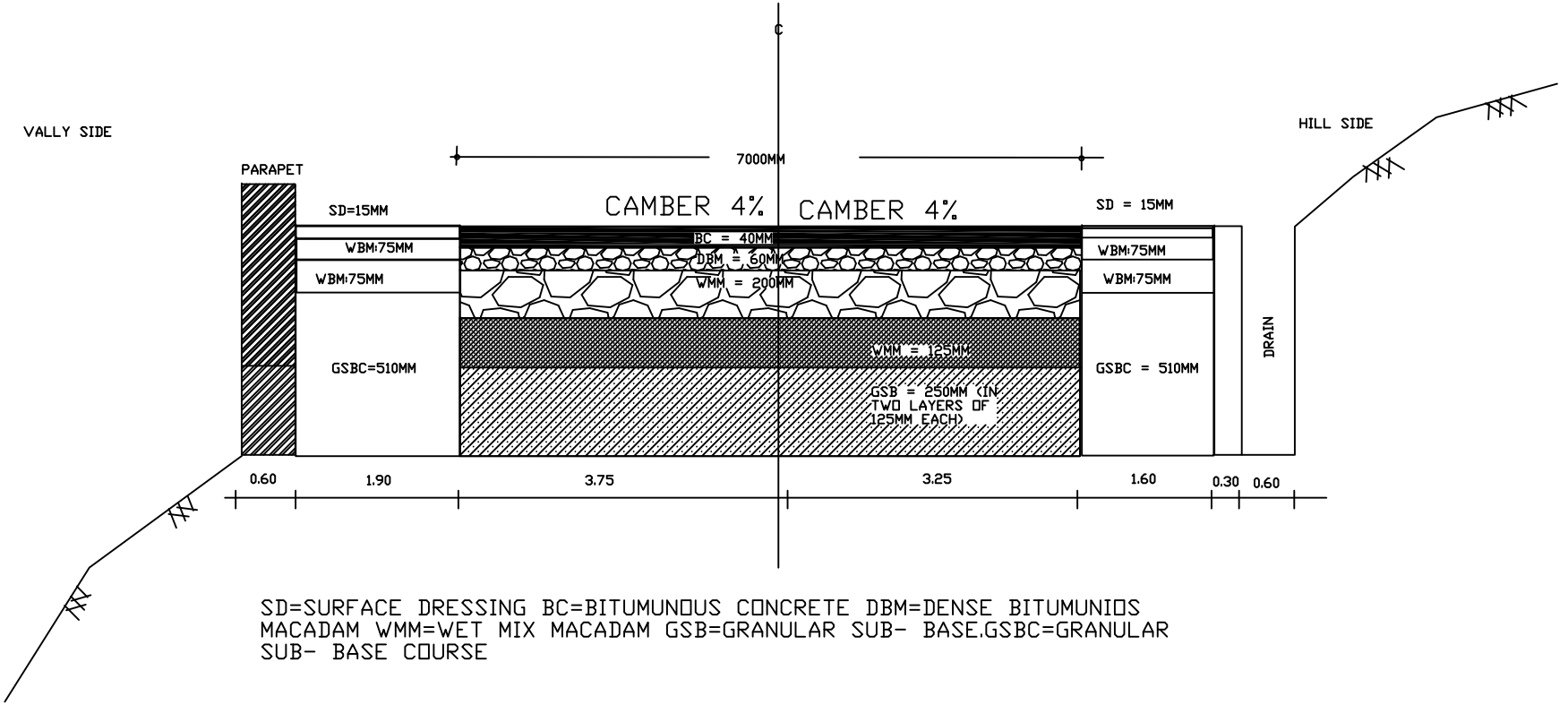
**TYPICAL X-SECTION OF PAVEMENT IN EXISTING AND WIDENING**

# TRANS ARUNACHAL HIGHWAY

SEGMENT:- BAME TO TAI-38.55KM

ALL DIMENSIONS ARE IN MM

**TOTAL FORMATION WIDTH = 12.00METRES**




SD=SURFACE DRESSING BC=BITUMUNOUS CONCRETE DBM=DENSE BITUMUNIOS MACADAM WMM=WET MIX MACADAM GSB=GRANULAR SUB- BASE.GSBC=GRANULAR SUB- BASE COURSE

**TYPICAL X-SECTION OF PAVEMENT IN PROPOSED CONSTRUCTION**

# ABSTRACT OF COST OF CULVERTS

**ANNEXURE -V**

Name of Work:- TRANS Arunachal Highway

***Segment :*** **Godak to subansiri bridge point (68.07 km.)**

| Sl.No. | | Description of Item | Qty | Rate | Unit | Amount (Rs.) | Remarks: |
|---|---|---|---|---|---|---|---|
| **1** | | **2** | **7** | **8** | **9** | **10** | **11** |
| | | | | | | | |
| 1 | | RCC Box culvert (1.00 m) | 365.00 | 4,50,000.00 | each | 16,42,50,000.00 | |
| 2 | | RCC Slab Culvert (2.00 m) | 90.00 | 9,50,000.00 | each | 8,55,00,000.00 | |
| 3 | | RCC Slab Culvert (3.00 m) | 24.00 | 1,42,000.00 | each | 34,08,000.00 | |
| 4 | | RCC Slab Culvert (4.00 m) | 12.00 | 19,55,000.00 | each | 2,34,60,000.00 | |
| | | **Total** | **491.00** | | **Rs.** | **27,66,18,000.00** | |

**DETAILS OF EXISTING CULVERTS REQUIRING RECONSTRUCTION.**

Name of Work:- TRANS Arunachal Highway

***Sagment:- Godak to subansiri bridge point (68.07 km)***

| Sl.No | Location (Km) | Existing Culvert | | Proposed for construction of Box/Slab Culverts | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type of structures (pipe,Slab Box | Span (m) | 1.00M | 2.00m | 3.00m | 4.00M | 5.00M | 6.00M | |
| 1 | 98.078 | Box | 1.500 | | 1 | | | | | |
| 2 | 98.262 | Box | 1.000 | 1 | | | | | | |
| 3 | 98.530 | Box | 1.000 | 1 | | | | | | |
| 4 | 98.970 | Box | 1.000 | 1 | | | | | | |
| 5 | 99.107 | Box | 1.000 | 1 | | | | | | |
| 6 | 99.252 | Box | 1.000 | 1 | | | | | | |
| 7 | 99.400 | Box | 0.600 | 1 | | | | | | |
| 8 | 99.870 | Box | 0.600 | 1 | | | | | | |
| 9 | 99.910 | Box | 2.000 | | 1 | | | | | |
| 10 | 100.083 | Box | 2.000 | | 1 | | | | | |
| 11 | 100.276 | Box | 1.000 | 1 | | | | | | |
| 12 | 100.462 | Box | 1.000 | 1 | | | | | | |
| 13 | 100.518 | Box | 1.000 | 1 | | | | | | |
| 14 | 100.627 | Box | 1.000 | 1 | | | | | | |
| 15 | 100.698 | Box | 1.000 | 1 | | | | | | |
| 16 | 100.730 | Box | 1.000 | 1 | | | | | | |
| 17 | 100.910 | Box | 2.000 | | 1 | | | | | |
| 18 | 101.200 | Box | 0.600 | 1 | | | | | | |
| 19 | 101.260 | Box | 0.600 | 1 | | | | | | |
| 20 | 101.390 | Box | 1.000 | 1 | | | | | | |
| 21 | 102.048 | Box | 0.600 | 1 | | | | | | |
| 22 | 102.190 | Box | 0.600 | 1 | | | | | | |
| 23 | 102.291 | Box | 0.600 | 1 | | | | | | |
| 24 | 102.755 | Box | 1.000 | 1 | | | | | | |
| 25 | 102.930 | Box | 0.600 | 1 | | | | | | |
| 26 | 103.116 | Box | 1.030 | | 1 | | | | | |
| 27 | 103.305 | Box | 0.600 | 1 | | | | | | |
| 28 | 103.467 | Box | 0.600 | 1 | | | | | | |
| 29 | 103.595 | Box | 0.600 | 1 | | | | | | |
| 30 | 103.716 | Box | 0.600 | 1 | | | | | | |
| 31 | 103.804 | Box | 1.000 | 1 | | | | | | |
| 32 | 103.960 | Box | 1.000 | 1 | | | | | | |
| 33 | 104.068 | Box | 1.000 | 1 | | | | | | |
| 34 | 104.183 | Box | 1.000 | 1 | | | | | | |
| 35 | 104.435 | Box | 1.000 | 1 | | | | | | |
| 36 | 104.566 | Box | 1.000 | 1 | | | | | | |
| 37 | 104.716 | Box | 1.000 | 1 | | | | | | |
| 38 | 104.923 | Box | 0.600 | 1 | | | | | | |
| 39 | 105.036 | Box | 0.900 | 1 | | | | | | |
| 40 | 105.193 | Box | 0.600 | 1 | | | | | | |
| 41 | 105.360 | Box | 0.600 | 1 | | | | | | |
| 42 | 105.427 | Box | 0.600 | 1 | | | | | | |
| 43 | 105.567 | Box | 0.600 | 1 | | | | | | |
| 44 | 105.657 | Box | 0.600 | 1 | | | | | | |
| 45 | 105.728 | Box | 0.600 | 1 | | | | | | |
| 46 | 105.834 | Box | 0.600 | 1 | | | | | | |
| 47 | 105.930 | Box | 0.600 | 1 | | | | | | |
| 48 | 106.015 | Box | 0.600 | 1 | | | | | | |
| 49 | 106.150 | Box | 0.900 | 1 | | | | | | |
| 50 | 106.304 | Box | 0.600 | 1 | | | | | | |
| 51 | 106.420 | Box | 0.600 | 1 | | | | | | |
| 52 | 106.480 | Box | 0.600 | 1 | | | | | | |
| 53 | 106.542 | Box | 1.000 | 1 | | | | | | |
| 54 | 106.669 | Box | 1.000 | 1 | | 1 | | | | |
| 55 | 106.740 | Box | 0.600 | 1 | | | | | | |
| 56 | 106.917 | Box | 1.000 | 1 | | | 1 | | | |

| Sl.No | Location (Km) | Existing Culvert | | Proposed for construction of Box/Slab Culverts | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type of structures (pipe,Slab Box | Span (m) | 1.00M | 2.00m | 3.00m | 4.00M | 5.00M | 6.00M | |
| 57 | 107.030 | Box | 0.600 | 1 | | | | | | |
| 58 | 107.117 | Box | 1.000 | 1 | | | | | | |
| 59 | 107.180 | Box | 1.000 | 1 | | | | | | |
| 60 | 107.362 | Box | 4.000 | | | | | | | |
| 61 | 107.410 | Box | 1.000 | 1 | | | | | | |
| 62 | 107.620 | Box | 0.600 | 1 | | | | | | |
| 63 | 107.765 | Box | 1.000 | 1 | | | | | | |
| 64 | 108.021 | Box | 1.000 | 1 | | | | | | |
| 65 | 108.100 | Box | 1.100 | | 1 | | | | | |
| 66 | 108.300 | Box | 0.900 | 1 | | | | | | |
| 67 | 108.447 | Box | 2.500 | | | 1 | | | | |
| 68 | 108.535 | Box | 1.000 | 1 | | | | | | |
| 69 | 108.665 | Box | 0.600 | 1 | | | | | | |
| 70 | 108.795 | Box | 0.600 | 1 | | | | | | |
| 71 | 109.023 | Box | 0.600 | 1 | | | | | | |
| 72 | 109.115 | Box | 1.200 | | 1 | | | | | |
| 73 | 109.220 | Box | 2.000 | | 1 | | | | | |
| 74 | 109.370 | Box | 1.000 | 1 | | | | | | |
| 75 | 109.616 | Box | 0.600 | 1 | | | | | | |
| 76 | 109.665 | Box | 0.600 | 1 | | | | | | |
| 77 | 109.848 | Box | 2.500 | | | 1 | | | | |
| 78 | 110.020 | Box | 1.000 | 1 | | | | | | |
| 79 | 110.250 | Box | 0.600 | 1 | | | | | | |
| 80 | 110.620 | Box | 1.000 | 1 | | | | | | |
| 81 | 110.665 | Box | 1.000 | 1 | | | | | | |
| 82 | 110.835 | Box | 1.200 | | 1 | | | | | |
| 83 | 110.940 | Box | 0.600 | 1 | | | | | | |
| 84 | 111.088 | Box | 3.800 | | | | 1 | | | |
| 85 | 111.218 | Box | 0.600 | 1 | | | | | | |
| 86 | 111.309 | Box | 0.600 | 1 | | | | | | |
| 87 | 111.579 | Box | 0.600 | 1 | | | | | | |
| 88 | 111.656 | Box | 0.600 | 1 | | | | | | |
| 89 | 111.752 | Box | 0.600 | 1 | | | | | | |
| 90 | 111.817 | Box | 2.000 | | 1 | | | | | |
| 91 | 111.876 | RCC | 0.600 | 1 | | | | | | |
| 92 | 112.042 | Box | 1.000 | 1 | | | | | | |
| 93 | 112.160 | Box | 1.000 | 1 | | | | | | |
| 94 | 112.291 | Box | 0.600 | 1 | | | | | | |
| 95 | 112.431 | Box | 0.600 | 1 | | | | | | |
| 96 | 112.590 | Box | 0.600 | 1 | | | | | | |
| 97 | 112.755 | Box | 0.600 | 1 | | | | | | |
| 98 | 112.869 | Box | 1.500 | | 1 | | | | | |
| 99 | 112.935 | Box | 2.000 | | 1 | | | | | |
| 100 | 113.005 | Box | 1.500 | | 1 | | | | | |
| 101 | 113.040 | Box | 0.600 | 1 | | | | | | |
| 102 | 113.140 | Box | 0.600 | 1 | | | | | | |
| 103 | 113.365 | Box | 0.600 | 1 | | | | | | |
| 104 | 113.570 | Box | 0.600 | 1 | | | | | | |
| 105 | 113.675 | Box | 0.600 | 1 | | | | | | |
| 106 | 113.780 | Box | 0.600 | 1 | | | | | | |
| 107 | 113.960 | Box | 0.600 | 1 | | | | | | |
| 108 | 114.090 | Box | 0.600 | 1 | | | | | | |
| 109 | 114.260 | Box | 0.600 | 1 | | | | | | |
| 110 | 114.395 | Box | 0.600 | 1 | | | | | | |
| 111 | 114.605 | Box | 0.600 | 1 | | | | | | |
| 112 | 114.680 | Box | 1.000 | 1 | | | | | | |
| 113 | 114.807 | Box | 0.600 | 1 | | | | | | |
| 114 | 114.913 | Box | 0.600 | 1 | | | | | | |
| 115 | 115.095 | Box | 0.600 | 1 | | | | | | |
| 116 | 115.195 | Box | 0.600 | 1 | | | | | | |
| 117 | 115.398 | Box | 0.600 | 1 | | | | | | |

| Sl.No | Location (Km) | Existing Culvert | | Proposed for construction of Box/Slab Culverts | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type of structures (pipe,Slab Box | Span (m) | 1.00M | 2.00m | 3.00m | 4.00M | 5.00M | 6.00M | |
| 118 | 115.480 | Box | 0.600 | 1 | | | | | | |
| 119 | 115.540 | Box | 1.000 | 1 | | | | | | |
| 120 | 115.912 | Box | 0.900 | 1 | | | | | | |
| 121 | 115.965 | Box | 1.000 | 1 | | | | | | |
| 122 | 116.035 | Box | 4.000 | | | | 1 | | | |
| 123 | 116.088 | Box | 0.600 | 1 | | | | | | |
| 124 | 116.175 | Box | 2.000 | | 1 | | | | | |
| 125 | 116.548 | Box | 0.600 | 1 | | | | | | |
| 126 | 116.647 | Box | 1.000 | 1 | | | | | | |
| 127 | 116.897 | Box | 0.600 | 1 | | | | | | |
| 128 | 116.987 | Box | 0.600 | 1 | | | | | | |
| 129 | 117.189 | Box | 0.600 | 1 | | | | | | |
| 130 | 117.307 | Box | 0.600 | 1 | | | | | | |
| 131 | 117.644 | Box | 0.600 | 1 | | | | | | |
| 132 | 117.720 | Box | 1.000 | 1 | | | | | | |
| 133 | 117.840 | Box | 0.600 | 1 | | | | | | |
| 134 | 118.038 | Box | 1.000 | 1 | | | | | | |
| 135 | 118.140 | Box | 2.500 | | | 1 | | | | |
| 136 | 118.298 | Box | 1.000 | 1 | | | | | | |
| 137 | 118.451 | Box | 1.000 | 1 | | | | | | |
| 138 | 118.517 | Box | 1.000 | 1 | | | | | | |
| 139 | 118.623 | Box | 1.000 | 1 | | | | | | |
| 140 | 118.717 | Box | 1.000 | 1 | | | | | | |
| 141 | 118.768 | Box | 2.500 | | | 1 | | | | |
| 142 | 119.157 | Box | 1.000 | 1 | | | | | | |
| 143 | 119.267 | Box | 1.000 | 1 | | | | | | |
| 144 | 119.551 | Box | 2.500 | | | 1 | | | | |
| 145 | 119.645 | Box | 1.200 | | 1 | | | | | |
| 146 | 119.690 | Box | 1.200 | | 1 | | | | | |
| 147 | 119.847 | Box | 1.000 | 1 | | | | | | |
| 148 | 120.093 | Box | 1.000 | 1 | | | | | | |
| 149 | 120.252 | Box | 2.500 | | | 1 | | | | |
| 150 | 120.448 | Box | 2.000 | | 1 | | | | | |
| 151 | 120.660 | Box | 2.000 | | 1 | | | | | |
| 152 | 120.760 | Box | 0.600 | 1 | | | | | | |
| 153 | 120.990 | Box | 3.000 | | | 1 | | | | |
| 154 | 121.193 | Box | 0.600 | 1 | | | | | | |
| 155 | 121.297 | Box | 1.100 | | 1 | | | | | |
| 156 | 121.350 | Box | 2.000 | | 1 | | | | | |
| 157 | 121.620 | Box | 1.200 | | 1 | | | | | |
| 158 | 121.735 | Box | 1.100 | | 1 | | | | | |
| 159 | 121.985 | Box | 1.000 | 1 | | | | | | |
| 160 | 122.180 | Box | 0.600 | 1 | | | | | | |
| 161 | 122.303 | Box | 0.600 | 1 | | | | | | |
| 162 | 122.425 | Box | 1.000 | 1 | | | | | | |
| 163 | 122.572 | Box | 0.600 | 1 | | | | | | |
| 164 | 122.720 | Box | 0.700 | 1 | | | | | | |
| 165 | 122.816 | Box | 3.000 | | | 1 | | | | |
| 166 | 122.890 | Box | 1.000 | 1 | | | | | | |
| 167 | 122.970 | Box | 0.600 | 1 | | | | | | |
| 168 | 123.044 | Box | 2.100 | | | 1 | | | | |
| 169 | 123.102 | Box | 1.000 | 1 | | | | | | |
| 170 | 123.318 | Box | 1.000 | 1 | | | | | | |
| 171 | 123.480 | Box | 2.000 | | 1 | | | | | |
| 172 | 123.530 | Box | 4.000 | | | | 1 | | | |
| 173 | 123.645 | Box | 1.000 | 1 | | | | | | |
| 174 | 123.824 | Box | 0.600 | 1 | | | | | | |
| 175 | 123.969 | Box | 0.600 | 1 | | | | | | |
| 176 | 124.227 | Box | 1.000 | 1 | | | | | | |
| 177 | 124.342 | RCC | 0.600 | 1 | | | | | | |
| 178 | 124.507 | Box | 2.000 | | 1 | | | | | |
| 179 | 124.536 | Box | 1.000 | 1 | | | | | | |

| Sl.No | Location (Km) | Existing Culvert | | Proposed for construction of Box/Slab Culverts | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type of structures (pipe,Slab Box | Span (m) | 1.00M | 2.00m | 3.00m | 4.00M | 5.00M | 6.00M | |
| 180 | 124.641 | Box | 1.000 | 1 | | | | | | |
| 181 | 124.809 | Box | 0.600 | 1 | | | | | | |
| 182 | 124.912 | Box | 0.700 | 1 | | | | | | |
| 183 | 124.963 | Box | 1.100 | 1 | | | | | | |
| 184 | 125.033 | Box | 1.000 | 1 | | | | | | |
| 185 | 125.325 | Box | 1.100 | | 1 | | | | | |
| 186 | 125.570 | Box | 2.000 | | 1 | | | | | |
| 187 | 125.660 | Box | 0.700 | 1 | | | | | | |
| 188 | 125.830 | Box | 1.200 | | 1 | | | | | |
| 189 | 125.885 | Box | 1.000 | 1 | | | | | | |
| 190 | 126.153 | Box | 2.000 | | 1 | | | | | |
| 191 | 126.265 | Box | 1.000 | 1 | | | | | | |
| 192 | 126.300 | Box | 1.200 | | 1 | | | | | |
| 193 | 126.479 | Box | 1.000 | 1 | | | | | | |
| 194 | 126.515 | Box | 0.600 | 1 | | | | | | |
| 195 | 126.720 | Box | 1.000 | 1 | | | | | | |
| 196 | 126.785 | Box | 1.000 | 1 | | | | | | |
| 197 | 126.802 | Box | 2.000 | | 1 | | | | | |
| 198 | 126.909 | Box | 1.000 | 1 | | | | | | |
| 199 | 127.347 | Box | 1.000 | 1 | | | | | | |
| 200 | 127.475 | Box | 0.600 | 1 | | | | | | |
| 201 | 127.600 | Box | 0.600 | 1 | | | | | | |
| 202 | 128.008 | Box | 1.000 | 1 | | | | | | |
| 203 | 128.180 | Box | 1.000 | 1 | | | | | | |
| 204 | 128.455 | Box | 1.000 | 1 | | | | | | |
| 205 | 128.566 | Box | 1.000 | 1 | | | | | | |
| 206 | 128.710 | Box | 1.000 | 1 | | | | | | |
| 207 | 129.021 | Box | 1.000 | 1 | | | | | | |
| 208 | 129.140 | Box | 1.000 | 1 | | | | | | |
| 209 | 129.320 | Box | 2.000 | | 1 | | | | | |
| 210 | 129.648 | Box | 1.000 | 1 | | | | | | |
| 211 | 130.035 | Box | 1.000 | 1 | | | | | | |
| 212 | 130.169 | Box | 1.000 | 1 | | | | | | |
| 213 | 130.265 | Box | 1.000 | 1 | | | | | | |
| 214 | 130.660 | Box | 0.600 | 1 | | | | | | |
| 215 | 130.700 | Box | 1.000 | 1 | | | | | | |
| 216 | 130.925 | Box | 1.000 | 1 | | | | | | |
| 217 | 131.031 | Box | 1.000 | 1 | | | | | | |
| 218 | 131.334 | Box | 1.000 | 1 | | | | | | |
| 219 | 131.520 | Box | 1.300 | | 1 | | | | | |
| 220 | 131.610 | Box | 1.000 | 1 | | | | | | |
| 221 | 131.804 | Box | 1.000 | 1 | | | | | | |
| 222 | 131.983 | Box | 0.600 | 1 | | | | | | |
| 223 | 132.148 | Box | 2.000 | | 1 | | | | | |
| 224 | 132.280 | Box | 1.000 | 1 | | | | | | |
| 225 | 132.305 | Box | 1.000 | 1 | | | | | | |
| 226 | 132.755 | Box | 2.500 | | | 1 | | | | |
| 227 | 132.805 | Box | 1.500 | | 1 | | | | | |
| 228 | 132.995 | Box | 1.500 | | 1 | | | | | |
| 229 | 133.090 | Box | 1.500 | | 1 | | | | | |
| 230 | 133.165 | Box | 2.500 | | | 1 | | | | |
| 231 | 133.260 | Box | 0.600 | 1 | | | | | | |
| 232 | 133.320 | Box | 1.000 | 1 | | | | | | |
| 233 | 133.445 | Box | 0.600 | 1 | | | | | | |
| 234 | 133.640 | Box | 1.000 | 1 | | | | | | |
| 235 | 133.840 | Box | 1.000 | 1 | | | | | | |
| 236 | 133.905 | Box | 1.000 | 1 | | | | | | |
| 237 | 134.175 | Box | 0.600 | 1 | | | | | | |
| 238 | 134.370 | Box | 1.000 | 1 | | | | | | |
| 239 | 134.465 | Box | 0.600 | 1 | | | | | | |
| 240 | 134.610 | Box | 1.000 | 1 | | | | | | |
| 241 | 134.750 | Box | 0.600 | 1 | | | | | | |
| 242 | 134.820 | Box | 0.600 | 1 | | | | | | |
| 243 | 135.043 | Box | 1.000 | 1 | | | | | | |

| Sl.No | Location (Km) | Existing Culvert | | Proposed for construction of Box/Slab Culverts | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type of structures (pipe,Slab Box | Span (m) | 1.00M | 2.00m | 3.00m | 4.00M | 5.00M | 6.00M | |
| 244 | 135.070 | Box | 0.600 | 1 | | | | | | |
| 245 | 135.350 | Box | 1.000 | 1 | | | | | | |
| 246 | 135.490 | Box | 1.000 | 1 | | | | | | |
| 247 | 135.600 | Box | 1.000 | 1 | | | | | | |
| 248 | 135.660 | Box | 2.000 | | 1 | | | | | |
| 249 | 135.947 | Box | 1.000 | 1 | | | | | | |
| 250 | 136.065 | Box | 1.000 | 1 | | | | | | |
| 251 | 136.130 | Box | 1.000 | 1 | | | | | | |
| 252 | 136.254 | Box | 4.000 | | | | 1 | | | |
| 253 | 136.400 | Box | 2.000 | | 1 | | | | | |
| 254 | 136.550 | Box | 1.000 | 1 | | | | | | |
| 255 | 136.650 | Box | 1.000 | 1 | | | | | | |
| 256 | 136.890 | Box | 1.500 | | 1 | | | | | |
| 257 | 136.950 | Box | 1.500 | | 1 | | | | | |
| 258 | 137.062 | Box | 1.000 | 1 | | | | | | |
| 259 | 137.092 | Box | 4.000 | | | | 1 | | | |
| 260 | 137.195 | Box | 1.000 | 1 | | | | | | |
| 261 | 137.255 | Box | 1.000 | 1 | | | | | | |
| 262 | 137.385 | Box | 4.000 | | | | 1 | | | |
| 263 | 137.497 | RCC | 1.300 | | 1 | | | | | |
| 264 | 137.512 | Box | 1.500 | | 1 | | | | | |
| 265 | 137.752 | Box | 1.500 | | 1 | | | | | |
| 266 | 137.861 | Box | 1.000 | 1 | | | | | | |
| 267 | 138.005 | Box | 1.500 | | 1 | | | | | |
| 268 | 138.092 | Box | 1.000 | 1 | | | | | | |
| 269 | 138.190 | Box | 1.500 | | 1 | | | | | |
| 270 | 138.307 | Box | 1.000 | 1 | | | | | | |
| 271 | 138.587 | Box | 1.000 | 1 | | | | | | |
| 272 | 138.658 | Box | 2.000 | | 1 | | | | | |
| 273 | 138.785 | Box | 1.500 | | 1 | | | | | |
| 274 | 138.960 | Box | 1.000 | 1 | | | | | | |
| 275 | 139.150 | Box | 1.000 | 1 | | | | | | |
| 276 | 139.270 | Box | 2.000 | | 1 | | | | | |
| 277 | 139.419 | Box | 1.000 | 1 | | | | | | |
| 278 | 139.600 | Box | 1.500 | | 1 | | | | | |
| 279 | 139.815 | Box | 2.500 | | | 1 | | | | |
| 280 | 139.890 | Box | 2.500 | | | 1 | | | | |
| 281 | 140.125 | Box | 1.000 | 1 | | | | | | |
| 282 | 140.195 | Box | 2.000 | | 1 | | | | | |
| 283 | 140.310 | Box | 1.500 | | 1 | | | | | |
| 284 | 140.420 | Box | 1.000 | 1 | | | | | | |
| 285 | 140.555 | Box | 1.000 | 1 | | | | | | |
| 286 | 140.800 | Box | 1.000 | 1 | | | | | | |
| 287 | 140.900 | Box | 1.000 | 1 | | | | | | |
| 288 | 140.940 | Box | 1.000 | 1 | | | | | | |
| 289 | 141.030 | Box | 1.000 | 1 | | | | | | |
| 290 | 141.186 | Box | 1.000 | 1 | | | | | | |
| 291 | 141.236 | Box | 1.500 | | 1 | | | | | |
| 292 | 141.600 | Box | 1.000 | 1 | | | | | | |
| 293 | 141.620 | Box | 1.000 | 1 | | | | | | |
| 294 | 141.720 | Box | 1.000 | 1 | | | | | | |
| 295 | 142.030 | Box | 4.000 | | | | 1 | | | |
| 296 | 142.155 | Box | 1.000 | 1 | | | | | | |
| 297 | 142.215 | Box | 1.000 | 1 | | | | | | |
| 298 | 142.370 | Box | 3.400 | | | | 1 | | | |
| 299 | 142.450 | Box | 1.000 | 1 | | | | | | |
| 300 | 142.542 | Box | 1.000 | 1 | | | | | | |
| 301 | 142.590 | Box | 1.000 | 1 | | | | | | |
| 302 | 142.730 | Box | 1.000 | 1 | | | | | | |
| 303 | 142.950 | Box | 1.000 | 1 | | | | | | |
| 304 | 143.305 | Box | 2.500 | | | 1 | | | | |
| 305 | 143.493 | Box | 1.000 | 1 | | | | | | |
| 306 | 143.843 | Box | 1.000 | 1 | | | | | | |
| 307 | 143.953 | Box | 1.000 | 1 | | | | | | |

| Sl.No | Location (Km) | Existing Culvert | | Proposed for construction of Box/Slab Culverts | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type of structures (pipe,Slab Box | Span (m) | 1.00M | 2.00m | 3.00m | 4.00M | 5.00M | 6.00M | |
| 308 | 144.148 | Box | 1.000 | 1 | | | | | | |
| 309 | 144.182 | Box | 1.000 | 1 | | | | | | |
| 310 | 144.273 | Box | 2.500 | | | 1 | | | | |
| 311 | 144.345 | Box | 1.000 | 1 | | | | | | |
| 312 | 144.423 | Box | 2.500 | | | 1 | | | | |
| 313 | 144.610 | Box | 2.000 | | 1 | | | | | |
| 314 | 144.645 | Box | 1.000 | 1 | | | | | | |
| 315 | 144.698 | Box | 1.000 | 1 | | | | | | |
| 316 | 144.850 | Box | 2.500 | | | 1 | | | | |
| 317 | 144.935 | Box | 1.500 | | 1 | | | | | |
| 318 | 145.300 | Box | 1.000 | 1 | | | | | | |
| 319 | 145.390 | Box | 1.500 | | 1 | | | | | |
| 320 | 145.500 | Box | 2.000 | | 1 | | | | | |
| 321 | 145.710 | Box | 1.000 | 1 | | | | | | |
| 322 | 145.810 | Box | 4.000 | | | | 1 | | | |
| 323 | 145.880 | Box | 1.500 | | 1 | | | | | |
| 324 | 146.040 | Box | 1.000 | 1 | | | | | | |
| 325 | 146.110 | Box | 1.000 | 1 | | | | | | |
| 326 | 146.275 | Box | 2.000 | | 1 | | | | | |
| 327 | 146.375 | Box | 1.000 | 1 | | | | | | |
| 328 | 146.525 | Box | 2.000 | | 1 | | | | | |
| 329 | 146.706 | Box | 1.500 | | 1 | | | | | |
| 330 | 146.765 | Box | 1.000 | 1 | | | | | | |
| 331 | 146.872 | Box | 1.000 | 1 | | | | | | |
| 332 | 147.062 | Box | 1.000 | 1 | | | | | | |
| 333 | 147.237 | Box | 0.600 | 1 | | | | | | |
| 334 | 147.365 | Box | 1.000 | 1 | | | | | | |
| 335 | 147.428 | Box | 1.000 | 1 | | | | | | |
| 336 | 147.628 | Box | 1.000 | 1 | | | | | | |
| 337 | 147.840 | Box | 0.600 | 1 | | | | | | |
| 338 | 147.980 | Box | 1.000 | 1 | | | | | | |
| 339 | 148.150 | Box | 0.600 | 1 | | | | | | |
| 340 | 148.355 | Box | 1.000 | 1 | | | | | | |
| 341 | 148.520 | Box | 1.000 | 1 | | | | | | |
| 342 | 148.850 | Box | 0.900 | 1 | | | | | | |
| 343 | 148.950 | Box | 0.900 | 1 | | | | | | |
| 344 | 149.063 | Box | 1.000 | 1 | | | | | | |
| 345 | 149.180 | Box | 0.900 | 1 | | | | | | |
| 346 | 149.345 | Box | 0.900 | 1 | | | | | | |
| 347 | 149.453 | Box | 0.700 | 1 | | | | | | |
| 348 | 149.575 | Box | 1.000 | 1 | | | | | | |
| 349 | 149.620 | RCC | 0.600 | 1 | | | | | | |
| 350 | 149.810 | Box | 2.000 | | 1 | | | | | |
| 351 | 149.845 | Box | 1.000 | 1 | | | | | | |
| 352 | 150.025 | Box | 1.000 | 1 | | | | | | |
| 353 | 150.068 | Box | 1.200 | | 1 | | | | | |
| 354 | 150.185 | Box | 2.500 | | | 1 | | | | |
| 355 | 150.345 | Box | 1.200 | | 1 | | | | | |
| 356 | 150.575 | Box | 2.500 | | | 1 | | | | |
| 357 | 150.740 | Box | 1.000 | 1 | | | | | | |
| 358 | 150.820 | Box | 1.000 | 1 | | | | | | |
| 359 | 150.875 | Box | 1.000 | 1 | | | | | | |
| 360 | 151.007 | Box | 0.800 | 1 | | | | | | |
| 361 | 151.188 | Box | 1.000 | 1 | | | | | | |
| 362 | 151.325 | Box | 0.700 | 1 | | | | | | |
| 363 | 151.750 | Box | 1.000 | 1 | | | | | | |
| 364 | 151.970 | Box | 0.800 | 1 | | | | | | |
| 365 | 152.057 | Box | 1.000 | 1 | | | | | | |
| 366 | 152.120 | Box | 1.000 | 1 | | | | | | |
| 367 | 152.183 | Box | 1.000 | 1 | | | | | | |
| 368 | 152.305 | Box | 1.000 | 1 | | | | | | |
| 369 | 152.400 | Box | 1.000 | 1 | | | | | | |
| 370 | 152.451 | Box | 1.000 | 1 | | | | | | |
| 371 | 152.567 | Box | 1.000 | 1 | | | | | | |

| Sl.No | Location (Km) | Existing Culvert | | Proposed for construction of Box/Slab Culverts | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type of structures (pipe,Slab Box | Span (m) | 1.00M | 2.00m | 3.00m | 4.00M | 5.00M | 6.00M | |
| 372 | 152.623 | Box | 1.000 | 1 | | | | | | |
| 373 | 152.738 | Box | 1.000 | 1 | | | | | | |
| 374 | 152.852 | Box | 1.000 | 1 | | | | | | |
| 375 | 153.150 | Box | 1.000 | 1 | | | | | | |
| 376 | 153.218 | Box | 2.000 | | 1 | | | | | |
| 377 | 153.380 | Box | 1.600 | | 1 | | | | | |
| 378 | 153.470 | Box | 1.500 | | 1 | | | | | |
| 379 | 153.660 | Box | 1.500 | | 1 | | | | | |
| 380 | 153.816 | Box | 1.500 | | 1 | | | | | |
| 381 | 153.933 | Box | 1.000 | 1 | | | | | | |
| 382 | 154.055 | Box | 1.200 | | 1 | | | | | |
| 383 | 154.162 | Box | 2.000 | | 1 | | | | | |
| 384 | 154.274 | Box | 1.000 | 1 | | | | | | |
| 385 | 154.350 | Box | 1.000 | 1 | | | | | | |
| 386 | 154.530 | Box | 2.000 | | 1 | | | | | |
| 387 | 154.703 | Box | 1.300 | | 1 | | | | | |
| 388 | 154.900 | Box | 1.000 | 1 | | | | | | |
| 389 | 154.984 | Box | 1.000 | 1 | | | | | | |
| 390 | 155.178 | Box | 0.900 | 1 | | | | | | |
| 391 | 155.305 | Box | 1.200 | | 1 | | | | | |
| 392 | 155.575 | Box | 1.000 | 1 | | | | | | |
| 393 | 155.705 | Box | 1.000 | 1 | | | | | | |
| 394 | 155.637 | Box | 0.900 | 1 | | | | | | |
| 395 | 155.865 | Box | 1.000 | 1 | | | | | | |
| 396 | 156.015 | Box | 1.000 | 1 | | | | | | |
| 397 | 156.090 | Box | 1.000 | 1 | | | | | | |
| 398 | 156.163 | Box | 1.500 | | 1 | | | | | |
| 399 | 156.240 | Box | 1.000 | 1 | | | | | | |
| 400 | 156.370 | Box | 1.200 | | 1 | | | | | |
| 401 | 156.450 | Box | 0.900 | 1 | | | | | | |
| 402 | 156.493 | Box | 0.600 | 1 | | | | | | |
| 403 | 156.659 | Box | 0.600 | 1 | | | | | | |
| 404 | 156.733 | Box | 1.000 | 1 | | | | | | |
| 405 | 156.938 | Box | 4.000 | | | | 1 | | | |
| 406 | 157.000 | Box | 1.100 | 1 | | | | | | |
| 407 | 157.056 | Box | 1.000 | 1 | | | | | | |
| 408 | 157.117 | Box | 0.600 | 1 | | | | | | |
| 409 | 157.180 | Box | 0.600 | 1 | | | | | | |
| 410 | 157.233 | Box | 4.000 | | | | 1 | | | |
| 411 | 157.290 | Box | 1.000 | 1 | | | | | | |
| 412 | 157.349 | Box | 2.900 | | | 1 | | | | |
| 413 | 157.395 | Box | 0.600 | 1 | | | | | | |
| 414 | 157.520 | Box | 2.500 | | | 1 | | | | |
| 415 | 157.645 | Box | 0.600 | 1 | | | | | | |
| 416 | 157.680 | Box | 2X1.00 | 2 | | | | | | |
| 417 | 157.750 | Box | 0.600 | 1 | | | | | | |
| 418 | 157.815 | Box | 0.600 | 1 | | | | | | |
| 419 | 157.945 | Box | 1.000 | 1 | | | | | | |
| 420 | 158.024 | Box | 1.000 | 1 | | | | | | |
| 421 | 158.162 | Box | 1.000 | 1 | | | | | | |
| 422 | 158.240 | Box | 1.000 | 1 | | | | | | |
| 423 | 158.314 | Box | 1.000 | 1 | | | | | | |
| 424 | 158.437 | Box | 1.000 | 1 | | | | | | |
| 425 | 158.515 | Box | 0.600 | 1 | | | | | | |
| 426 | 158.611 | Box | 1.500 | | 1 | | | | | |
| 427 | 158.700 | Box | 1.000 | 1 | | | | | | |
| 428 | 158.770 | Box | 0.900 | 1 | | | | | | |
| 429 | 158.840 | Box | 1.000 | 1 | | | | | | |
| 430 | 158.975 | Box | 1.000 | 1 | | | | | | |
| 431 | 159.210 | Box | 0.700 | 1 | | | | | | |
| 432 | 159.285 | Box | 0.600 | 1 | | | | | | |
| 433 | 159.470 | Box | 0.700 | 1 | | | | | | |
| 434 | 159.604 | Box | 0.600 | 1 | | | | | | |
| 435 | 159.696 | RCC | 0.600 | 1 | | | | | | |

| Sl.No | Location (Km) | Existing Culvert | | Proposed for construction of Box/Slab Culverts | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type of structures (pipe,Slab Box | Span (m) | 1.00M | 2.00m | 3.00m | 4.00M | 5.00M | 6.00M | |
| 436 | 159.757 | Box | 1.000 | 1 | | | | | | |
| 437 | 159.843 | Box | 0.600 | 1 | | | | | | |
| 438 | 159.966 | Box | 0.600 | 1 | | | | | | |
| 439 | 160.478 | Box | 1.200 | | 1 | | | | | |
| 440 | 160.576 | Box | 1.000 | 1 | | | | | | |
| 441 | 160.646 | Box | 1.300 | | 1 | | | | | |
| 442 | 160.725 | Box | 1.000 | 1 | | | | | | |
| 443 | 160.896 | Box | 1.000 | 1 | | | | | | |
| 444 | 161.120 | Box | 1.300 | | 1 | | | | | |
| 445 | 161.240 | Box | 1.300 | | 1 | | | | | |
| 446 | 161.635 | Box | 0.900 | 1 | | | | | | |
| 447 | 161.837 | Box | 0.900 | 1 | | | | | | |
| 448 | 162.009 | Box | 0.900 | 1 | | | | | | |
| 449 | 162.151 | Box | 0.900 | 1 | | | | | | |
| 450 | 162.464 | Box | 1.000 | 1 | | | | | | |
| 451 | 162.487 | Box | 0.900 | 1 | | | | | | |
| 452 | 162.543 | Box | 0.600 | 1 | | | | | | |
| 453 | 162.709 | Box | 0.600 | 1 | | | | | | |
| 454 | 162.809 | Box | 0.600 | 1 | | | | | | |
| 455 | 163.139 | Box | 0.900 | 1 | | | | | | |
| 456 | 163.401 | Box | 0.900 | 1 | | | | | | |
| 457 | 163.519 | Box | 0.900 | 1 | | | | | | |
| 458 | 163.611 | Box | 0.900 | 1 | | | | | | |
| 459 | 163.701 | Box | 0.600 | 1 | | | | | | |
| 460 | 163.748 | Box | 0.600 | 1 | | | | | | |
| 461 | 163.800 | Box | 0.900 | 1 | | | | | | |
| 462 | 163.857 | Box | 0.900 | 1 | | | | | | |
| 463 | 163.893 | Box | 0.600 | 1 | | | | | | |
| 464 | 163.967 | Box | 0.900 | 1 | | | | | | |
| 465 | 164.019 | Box | 0.600 | 1 | | | | | | |
| 466 | 164.036 | Box | 0.900 | 1 | | | | | | |
| 467 | 164.144 | Box | 0.900 | 1 | | | | | | |
| 468 | 164.230 | Box | 1.000 | 1 | | | | | | |
| 469 | 164.367 | Box | 1.100 | | 1 | | | | | |
| 470 | 164.463 | Box | 1.200 | | 1 | | | | | |
| 471 | 164.513 | Box | 0.900 | 1 | | | | | | |
| 472 | 164.591 | Box | 1.900 | | 1 | | | | | |
| 473 | 164.804 | Box | 1.500 | | 1 | | | | | |
| 474 | 164.937 | Box | 1.200 | | 1 | | | | | |
| 475 | 164.997 | Box | 1.000 | 1 | | | | | | |
| 476 | 165.120 | Box | 0.900 | 1 | | | | | | |
| 477 | 165.174 | Box | 1.000 | 1 | | | | | | |
| 478 | 165.214 | Box | 0.900 | 1 | | | | | | |
| 479 | 165.259 | Box | 1.000 | 1 | | | | | | |
| 480 | 165.391 | Box | 1.500 | | 1 | | | | | |
| 481 | 165.437 | Box | 0.600 | 1 | | | | | | |
| 482 | 165.528 | Box | 0.600 | 1 | | | | | | |
| 483 | 165.664 | Box | 3.000 | | | 1 | | | | |
| 484 | 165.707 | Box | 1.800 | | 1 | | | | | |
| 485 | 165.859 | Box | 1.800 | | 1 | | | | | |
| 486 | 165.887 | Box | 1.100 | | 1 | | | | | |
| 487 | 165.912 | Box | 2.400 | | | 1 | | | | |
| 488 | 165.970 | Box | 1.000 | 1 | | | | | | |
| 489 | 166.005 | Box | 1.300 | | 1 | | | | | |
| | | | | **365** | **90** | **24** | **12** | | | |

# ABSTRACT OF COST OF BRIDGES.

**ANNEXURE -VI**

Name of Work:- TRANS Arunachal Highway

**Sagment:-** Godak to subansiri bridge point(68.07 km.)

| Sl.No. | location in km | Description of Item | Qty | Rate | Unit | Amount (Rs.) | Remarks: |
|---|---|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| 1 | 109.720 | RCC T-Beam Bridge 1 No | 14.00 | 11,00,000.00 | mtr. | 1,54,00,000.00 | |
| 2 | 118.890 | RCC T-Beam Bridge -1 No | 15.00 | 11,50,000.00 | mtr. | 1,72,50,000.00 | |
| 3 | 121.230 | RCC T-Beam Bridge -No | 9.00 | 9,00,000.00 | mtr. | 81,00,000.00 | |
| 4 | 138.250 | RCC T-Beam Bridge 1 No | 10.00 | 10,00,000.00 | mtr. | 1,00,00,000.00 | |
| 5 | 160.010 | RCC T-Beam Bridge -1 No | 48.00 | 18,50,000.00 | | 8,88,00,000.00 | |
| 6 | 162.900 | RCC T-Beam Bridge 1 No | 11.00 | 11,00,000.00 | | 1,21,00,000.00 | |
| 7 | 166.070 | Steel Bridge- 1 No. | 131.00 | 15,00,000.00 | | 19,65,00,000.00 | |
| | | | 238.00 | | **Rs.** | **34,81,50,000.00** | |

## DETAILS OF EXISTING AND PROPOSED BRIDGES

Name of Work:- TRANS Arunachal Highway
Sagment:- *Godak to subansiri bridge point (68.07)*

| Sl.No. | Chainage | Name of Bridge | Existing | | Proposed | |
|---|---|---|---|---|---|---|
| | | | Span | Type | Span | Type |
| 1 | 2 | 4 | 5 | 6 | 7 | 8 |
| 1 | 109.720 | CHIKRU Nallah | 13.72 | RCC | 14.00 | RCC-T Beam Bridge |
| 2 | 118.890 | GAE Nallah | 15.24 | RCC | 15.00 | RCC-T Beam Bridge |
| 3 | 121.230 | SIBE Nallah | 9.20 | RCC | 9.00 | RCC-T Beam Bridge |
| 4 | 138.250 | MATE Nallah | 10.06 | MSS | 10.00 | RCC-T Beam Bridge |
| 5 | 160.010 | SIGIN River | 48.77 | BB | 48.00 | RCC-T Beam Bridge |
| 6 | 162.900 | SIYIN RIVER | 10.98 | RCC | 11.00 | RCC-T Beam Bridge |
| 7 | 166.070 | SUBANSIRI RIVER | 131.10 | BB | 131.00 | Steel Bridge |
| | | | 239.07 | | 238.00 | |

# ABSTRACT OF COST (DRAIN)

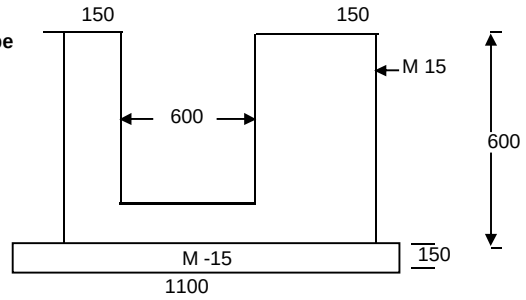
**ANNEXURE -VII**

Name of Work:- TRANS Arunachal Highway

**Segment:** ***Godak to subansiri bridge point (68.07 km.)*** **IRC : SP - 48 - 1998**

| | | | |
|---|---|---|---|
| Total length of Road = | 68,070.00 | m | |
| Less water gap(Bridges) | 238.00 | m | |
| (Culvert) | 665.00 | m | |
| | 67167.00 | m | |
| Total length of drain = | 67167.00 | | |
| a) U - Shaped Drain = | 40,300.20 | m | |
| b) Triangle Drain = | 20,150.10 | m | |
| c) Kerb and Channel = | 6,716.70 | m | |

**1) U-Shape**




1 E/Work - 1.00x1.00x1.10x0.75 = 0.825Cum

0.83 x 40300.20 = 33368.57 cum @ 136.00 per cum = 45,38,124.92

2 M-15 Base - 1x1.00x1.10x0.150 = 0.165Cum

0.165 x 40,300.20 = 6649.53

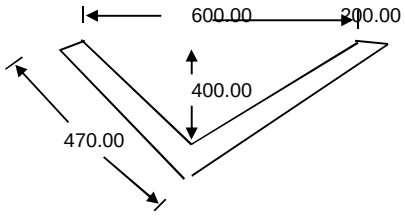
Wall - 2x1.00x0.60x0.15 = 0.180Cum

0.18 x 40,300.20 = 7254.04

**13903.57** cum @ 4,516.00 per cum = 6,27,88,517.60

**6,73,26,642.53** As per APSR 2007

**2) Triangular**




1 E/Work - 1/2 x 0.900 x 0.60 x 1.00m = 0.27Cum. X 20150.10 = 5441.00Cum X 169/Cum

= 919529.00

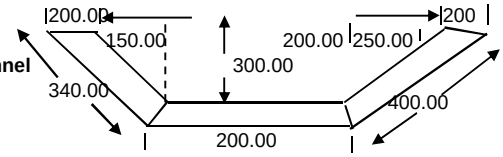
0.27 x 20150.1

2 Stone masonry 2 x 4.70 x 0.20 x 1.00 = 0.188 Cum x 20150 = 3788.00 Cum x 3305/Cum

= 12519340.00

0.19 x 20150.1 = **13438869.00** Rs **1,34,38,869.00** As per APSR 2007

**3) Kerb & Channel**




1 E/Work - 1 x 1.00 + 0.40/2 x 0.500 x 1.00 = 0.35 Cum x 6717.70 = 2351.19um x 169/Cum

= 397351.11

2 Stone masonry 1 x 1.00 x 0.940 x 0.20 = 0.188 Cum x 6717.70= 1262.93 Cum x 3305/Cum

= 4173983.65

**4571334.76** Rs **45,71,334.76**

**8,53,36,846.29** As per APSR 2007

## PROTECTION WORK

**( Annexure - VIII)**

Name of Work:- TRANS Arunachal Highway

Sagment:- Godak to subansiri bridge point (68.07 km.)

| Sl.No. | Description of Item | Qnty | Rate | Unit | Amount (in Rs.) | Remarks |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | R/Wall - 4Mtr Ht. | 555.00 | 16,350.00 | Mtr. | 90,74,250.00 | |
| 2 | R/Wall - 6Mtr Ht. | 63.00 | 23,368.00 | Mtr. | 14,72,184.00 | |
| 3 | B/Wall - 2Mtr Ht. | 570.00 | 12,100.00 | Mtr. | 68,97,000.00 | |
| 4 | R/Wall - 3Mtr Ht. | 166.00 | 17,106.00 | Mtr. | 28,39,596.00 | |
| | | | | | **2,02,83,030.00** | |

# TRAFFIC SIGN, MARKING AND ROAD APPURTENANCES

Name of Work:- TRANS Arunachal Highway

**Sagment:- Godak to subansiri bridge point (68.07 km.)** **( Annexure - IX)**

| Sl.No. | Description of Item | Qnty | Rate | Unit | Amount in (Rs.) | Remarks |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC : 67 made of encapsulated lens type reflective sheeting vide clause 8013, fixed over aluminium sheeting 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm ( height from crown level of the road and bottom of the sign board shall not be less than 1.5 m.) firmly fixed to the ground by means of prperly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing including painting of vertical post as per specification. | | | | | |
| | a) 60 cm equilateral triangle cautionary Sign. | 241.00 | 3,120.00 | Each | 7,51,920.00 | |
| | b) 60 cm circular ' mandatory Sign | 21.00 | 4,282.00 | Each | 89,922.00 | |
| | c) 80 cm x 60 cm rectangular | 4.00 | 6,084.00 | Each | 24,336.00 | |
| | d) 60 cm x 45 cm rectangular | 16.00 | 4,163.00 | Each | 66,608.00 | |
| | e) 60 cm high octagon Stop Signs | 9.00 | 4,282.00 | Each | 38,538.00 | |
| | | | | | | |
| 2 | Direction and place identification signs upto 0.9 sqm. Size board (Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of high intensity grade sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm (height from crown level of the road and bottom of the sign board shall not be less than 1.5m) firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing including painting of vertical post as per specification. | | | | | |
| | a) 800 mm x 600 mm | 2.00 | 5,885.00 | Each | 11,770.00 | |
| | b) 600 mm x 450 mm | 14.00 | 3,130.00 | Each | 43,820.00 | |
| | | | | | | |
| 3 | Direction and place identification signs with size more than 0.9 sqm. size board (Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm (height from crown level of the road and bottom of the sign board shall not be less than 1.5m) , 2Nos, firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing including painting of vertical post as per specification. | | | | | |
| | 1200 mm x 800 | 5.00 | 20,232.00 | Each | 1,01,160.00 | |
| 4 | Providing reinforced cement concrete M15 Grade Kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc asper relevant clause of section - 800 of specifications. | | | | | |
| | a) 5th kilometre stone (precast) | 7.00 | 2,785.00 | Each | 19,495.00 | |

| Sl.No. | Description of Item | Qnty | Rate | Unit | Amount in (Rs.) | Remarks |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | b) Ordinary Kilometre stone (precast) | 36.00 | 1,698.00 | Each | 61,128.00 | |
| | c) Hectometer stone (precast) | 234.00 | 461.00 | Each | 1,07,874.00 | |
| **5** | Providing and fixing road delineators complete as per technical specification section 800 | | | | | |
| | a) Triangular object marker 3.00 mm side with four red reflector, made out of 2mm thick alluminium sheet, face to be fully covered by high intensity grade white retro reflective sheeting of encapsulated lens type. The background/border/symbols shall be made by screen printing of desired colour as per sign details. The sign iron frame fixed with 6 mm dia alluminium rebates on MS angle iron of size 40mm x 40mm x 5mm (NB) dia medium weight 500mm high MS pipe. all components of signs and supports shall be throughly descaled, cleaned, printed and painted with two coats of epoxy paint. the sign back side shall be with grey colour and post shall be white colour. the post below ground shall be painted with 3 coats of red lead paint. | 21.00 | 1,431.00 | Each | 30,051.00 | |
| | | | | | | |
| | b) Rectangular hazard marker 60 mm x 300 mm made out of 2 mm thick alluminium sheet, face to be fully covered by high intensity grade white retro reflective sheeting of encapsulated lens type. The background/border/symbols shall be made by screen printing of desired colour as per sign details. The sign plate shall be fixed with 6 mm dia dia alluminium rebates on MS angle iron frame. The angle iron frame shall be made with angle size 40 mm x 40 mm x 5 mm. The sign shall be fixed to 80 mm dia (NB) MS Pipe (MW) supports with nut boils and welding. | 16.00 | 2,619.00 | Each | 41,904.00 | |
| **c)** | Providing and fixing of 1 mm RCC guide post 300 mm dia of NP - 2 type HP - 1m high confirming to IS:458-1988 for guard stone, formation indicators, boundary stones etc. duly filled with earth except 0.15m from top, cement concrete of M-10 topping as shown in the drawing and pipe embedded in cement concrete block of M-10 size 600 mm x 650 mm complete in all respects including cost of painting with white and black paint. | 537.00 | 1,549.00 | Each | 8,31,813.00 | |
| **7** | Reinforcement cement concrete M-15 grade boundary pillars of standard design as per IRC-25-1967, fixed in position including finishing and lettring but including painting)etc. complete.) | 100.00 | 436.00 | Each | 43,600.00 | |
| **8** | Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 810) | 34447.00 | 2,740.00 | Each | 9,43,84,780.00 | |
| | | | | **Rs.** | **9,66,48,719.00** | |

**Annexure- C**

**LOCATION OF QUARRIES**

| Sl.No. | Location of area | Material available | Average Lead | Remarks |
|---|---|---|---|---|
| 1 | Muri | River bed stone boulder-90-40, 63-40,& 20mm. | 30 | Under private purview. ( Minor) |
| 2 | Dong | River bed stone boulder-90-40, 63-40, 20mm and sand & shingle | 15 | Under private purview. ( Minor) |
| 3 | Sigin | River bed stone boulder-90-40, 63-40, 20mm and sand & shingle | 5km | Govt. approved quarry. |

# INVENTORIES

- CULVERTS
- BRIDGES
- ROAD
- PAVEMENTS

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 1 | 98.078 | Box culvert | 0.20 | 1.500 | 4.20 | 6.50 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Ch. on Ziro-Daporijo BRTF Road, Proposed Replacement |
| 2 | 98.262 | Box culvert | 0.20 | 1.000 | 3.50 | 6.50 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 3 | 98.530 | Box culvert | 0.20 | 1.000 | 3.60 | 6.50 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 4 | 98.970 | Box culvert | 0.20 | 1.000 | 3.40 | 6.60 | RRM | P | P | P | | | P | 2.00 | 2.00 | | Yes | Proposed Replacement |
| 5 | 99.107 | Box culvert | 0.20 | 1.000 | 3.50 | 6.30 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 6 | 99.252 | Box culvert | 0.20 | 1.000 | 3.30 | 6.20 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 7 | 99.400 | Box culvert | 0.20 | 0.600 | 3.20 | 6.10 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 8 | 99.870 | Box culvert | 0.20 | 0.600 | 3.70 | 6.50 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 9 | 99.910 | Box culvert | 0.25 | 2.000 | 4.30 | 6.10 | RRM | F | F | F | | | F | 2.50 | 5.20 | | Yes | Proposed Replacement |
| 10 | 100.083 | Box culvert | 0.25 | 2.000 | 4.00 | 6.30 | RRM | F | F | F | | | F | 2.00 | 5.00 | | Yes | Proposed Replacement |
| 11 | 100.276 | Box culvert | 0.20 | 1.000 | 3.65 | 7.20 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 12 | 100.462 | Box culvert | 0.20 | 1.000 | 3.30 | 5.10 | RRM | F | F | F | | | F | 2.00 | 2.00 | | Yes | Proposed Replacement |
| 13 | 100.518 | Box culvert | 0.20 | 1.000 | 3.20 | 5.30 | RRM | F | F | F | | | F | 2.30 | 2.50 | | Yes | Proposed Replacement |
| 14 | 100.627 | Box culvert | 0.20 | 1.000 | 3.50 | 6.60 | RRM | F | F | F | | | F | 1.40 | 1.60 | | Yes | Proposed Replacement |
| 15 | 100.698 | Box culvert | 0.20 | 1.000 | 3.80 | 6.60 | RRM | F | F | F | | | F | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 16 | 100.730 | Box culvert | 0.20 | 1.000 | 3.80 | 6.60 | RRM | F | F | F | | | F | 1.50 | 3.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 17 | 100.910 | Box culvert | 0.25 | 2.000 | 4.00 | 6.10 | RRM | F | F | F | | | F | 2.50 | 2.50 | | Yes | Proposed Replacement |
| 18 | 101.200 | Box culvert | 0.20 | 0.600 | 3.40 | 6.30 | RRM | F | F | F | | | F | 2.50 | 3.00 | | Yes | Proposed Replacement |
| 19 | 101.260 | Box culvert | 0.20 | 0.600 | 3.40 | 6.10 | RRM | F | P | P | | | F | 1.40 | 1.40 | | Yes | Proposed Replacement |
| 20 | 101.390 | Box culvert | 0.20 | 1.000 | 3.60 | 6.60 | RRM | F | F | F | | | F | 2.50 | 2.50 | | Yes | Proposed Replacement |
| 21 | 102.048 | Box culvert | 0.20 | 0.600 | 3.40 | 6.70 | RRM | F | F | F | | | F | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 22 | 102.190 | Box culvert | 0.20 | 0.600 | 3.20 | 5.30 | RRM | F | F | F | | | F | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 23 | 102.291 | Box culvert | 0.20 | 0.600 | 3.40 | 5.80 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 24 | 102.755 | Box culvert | 0.20 | 1.000 | 3.40 | 6.50 | RRM | P | F | F | | | - | 2.50 | 10.00 | | Yes | Proposed Replacement |
| 25 | 102.930 | Box culvert | 0.20 | 0.600 | 3.20 | 4.65 | RRM | F | F | F | | | - | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 26 | 103.116 | Box culvert | 0.20 | 1.030 | 4.30 | 6.30 | RRM | F | F | F | | | - | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 27 | 103.305 | Box culvert | 0.20 | 0.600 | 3.30 | 6.30 | RRM | P | P | P | | | - | 1.50 | 2.30 | | Yes | Proposed Replacement |
| 28 | 103.467 | Box culvert | 0.20 | 0.600 | 3.40 | 6.40 | RRM | P | P | P | | | P | 2.00 | 2.50 | | Yes | Proposed Replacement |
| 29 | 103.595 | Box culvert | 0.20 | 0.600 | 3.30 | 6.10 | RRM | P | P | P | | | P | 1.50 | 2.30 | | Yes | Proposed Replacement |
| 30 | 103.716 | Box culvert | 0.20 | 0.600 | 3.20 | 6.30 | RRM | P | P | P | | | P | 1.40 | 2.50 | | Yes | Proposed Replacement |
| 31 | 103.804 | Box culvert | 0.20 | 1.000 | 3.50 | 6.60 | RRM | P | P | P | | | P | 1.50 | 2.30 | | Yes | Proposed Replacement |
| 32 | 103.960 | Box culvert | 0.20 | 1.000 | 3.50 | 6.60 | RRM | P | P | P | | | P | 2.00 | 2.70 | | Yes | Proposed Replacement |
| 33 | 104.068 | Box culvert | 0.20 | 1.000 | 4.00 | 5.70 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 34 | 104.183 | Box culvert | 0.20 | 1.000 | 3.70 | 6.30 | RRM | P | P | P | | | P | 2.00 | 3.00 | | Yes | Proposed Replacement |
| 35 | 104.435 | Box culvert | 0.20 | 1.000 | 3.70 | 6.40 | RRM | P | P | P | | | NE | 1.60 | 2.30 | | Yes | Proposed Replacement |
| 36 | 104.566 | Box culvert | 0.20 | 1.000 | 3.80 | 6.50 | RRM | P | P | P | | | NE | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 37 | 104.716 | Box culvert | 0.20 | 1.000 | 3.50 | 6.30 | RRM | P | P | P | | | NE | 1.50 | 2.20 | | Yes | Proposed Replacement |
| 38 | 104.923 | Box culvert | 0.20 | 0.600 | 3.20 | 5.20 | RRM | P | P | P | | | P | 1.60 | 2.70 | | Yes | Proposed Replacement |
| 39 | 105.036 | Box culvert | 0.20 | 0.900 | 4.00 | 5.70 | RRM | P | P | P | | | P | 2.30 | 2.90 | | Yes | Proposed Replacement |
| 40 | 105.193 | Box culvert | 0.20 | 0.600 | 3.20 | 5.10 | RRM | P | P | P | | | P | 2.00 | 2.00 | | Yes | Proposed Replacement |
| 41 | 105.360 | Box culvert | 0.20 | 0.600 | 3.50 | 5.50 | RRM | P | P | P | | | P | 1.50 | 4.00 | | Yes | Proposed Replacement |
| 42 | 105.427 | Box culvert | 0.20 | 0.600 | 4.00 | 6.00 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 43 | 105.567 | Box culvert | 0.20 | 0.600 | 3.30 | 5.30 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 44 | 105.657 | Box culvert | 0.20 | 0.600 | 4.00 | 5.80 | RRM | P | P | P | | | NE | 1.50 | 8.00 | | Yes | Proposed Replacement |
| 45 | 105.728 | Box culvert | 0.20 | 0.600 | 3.50 | 5.90 | RRM | P | P | P | | | NE | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 46 | 105.834 | Box culvert | 0.20 | 0.600 | 3.50 | 5.10 | RRM | P | P | P | | | NE | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 47 | 105.930 | Box culvert | 0.20 | 0.600 | 3.30 | 5.50 | RRM | P | P | P | | | NE | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 48 | 106.015 | Box culvert | 0.20 | 0.600 | 3.20 | 6.20 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 49 | 106.150 | Box culvert | 0.20 | 0.900 | 3.70 | 5.70 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 50 | 106.304 | Box culvert | 0.20 | 0.600 | 3.40 | 5.20 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 51 | 106.420 | Box culvert | 0.20 | 0.600 | 3.40 | 5.60 | RRM | P | P | P | | | NE | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 52 | 106.480 | Box culvert | 0.20 | 0.600 | 3.40 | 5.30 | RRM | P | P | P | | | P | 1.50 | 7.00 | | Yes | Proposed Replacement |
| 53 | 106.542 | Box culvert | 0.20 | 1.000 | 4.00 | 6.10 | RRM | P | P | P | | | P | 1.50 | 7.00 | | Yes | Proposed Replacement |
| 54 | 106.669 | Box culvert | 0.20 | 1.000 | 3.80 | 5.50 | RRM | P | P | P | | | P | 1.50 | 15.00 | | Yes | Proposed Replacement |
| 55 | 106.740 | Box culvert | 0.20 | 0.600 | 3.50 | 5.60 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 56 | 106.917 | Box culvert | 0.20 | 1.000 | 3.30 | 5.80 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 57 | 107.030 | Box culvert | 0.20 | 0.600 | 3.30 | 5.70 | RRM | P | P | P | | | P | 1.30 | 2.50 | | Yes | Proposed Replacement |
| 58 | 107.117 | Box culvert | 0.20 | 1.000 | 3.80 | 5.80 | RRM | P | P | P | | | P | 2.00 | 8.00 | | Yes | Proposed Replacement |
| 59 | 107.180 | Box culvert | 0.20 | 1.000 | 3.40 | 6.10 | RRM | P | P | P | | | P | 2.00 | 5.00 | | Yes | Proposed Replacement |
| 60 | 107.362 | Box culvert | 0.35 | 4.000 | 3.50 | 6.55 | RRM | G | G | G | | | P | 3.00 | 7.50 | | Yes | Proposed Replacement |
| 61 | 107.410 | Box culvert | 0.20 | 1.000 | 3.40 | 5.50 | RRM | G | VP | VP | | | VP | 1.00 | 2.00 | | Yes | Proposed Replacement |
| 62 | 107.620 | Box culvert | 0.20 | 0.600 | 3.40 | 5.85 | RRM | P | P | P | | | P | 1.50 | 6.00 | | Yes | Proposed Replacement |
| 63 | 107.765 | Box culvert | 0.20 | 1.000 | 3.40 | 5.60 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 64 | 108.021 | Box culvert | 0.20 | 1.000 | 3.50 | 5.60 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 65 | 108.100 | Box culvert | 0.20 | 1.100 | 3.60 | 5.80 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 66 | 108.300 | Box culvert | 0.20 | 0.900 | 3.70 | 7.10 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 67 | 108.447 | Box culvert | 0.25 | 2.500 | 4.20 | 6.30 | RRM | P | P | P | | | P | 3.00 | 15.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 68 | 108.535 | Box culvert | 0.20 | 1.000 | 3.50 | 5.30 | RRM | P | P | P | | | P | 1.50 | 3.30 | | Yes | Proposed Replacement |
| 69 | 108.665 | Box culvert | 0.20 | 0.600 | 3.50 | 5.40 | RRM | P | P | P | | | NE | 1.00 | 2.00 | | Yes | Proposed Replacement |
| 70 | 108.795 | Box culvert | 0.20 | 0.600 | 3.80 | 5.20 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 71 | 109.023 | Box culvert | 0.20 | 0.600 | 3.60 | 6.40 | RRM | VP | VP | VP | | | VP | 1.50 | 4.50 | | Yes | Proposed Replacement |
| 72 | 109.115 | Box culvert | 0.20 | 1.200 | 4.00 | 6.40 | RRM | P | P | P | | | VP | 1.50 | 4.80 | | Yes | Proposed Replacement |
| 73 | 109.220 | Box culvert | 0.20 | 2.000 | 4.10 | 5.90 | RRM | P | P | P | | | VP | 1.50 | 4.00 | | Yes | Proposed Replacement |
| 74 | 109.370 | Box culvert | 0.20 | 1.000 | 3.70 | 5.90 | RRM | P | P | P | | | VP | 1.00 | 8.00 | | Yes | Proposed Replacement |
| 75 | 109.616 | Box culvert | 0.20 | 0.600 | 3.50 | 6.00 | RRM | P | P | P | | | P | 1.30 | 5.50 | | Yes | Proposed Replacement |
| 76 | 109.665 | Box culvert | 0.20 | 0.600 | 3.60 | 5.60 | RRM | P | P | P | | | P | 1.00 | 3.00 | | Yes | Proposed Replacement |
| 77 | 109.848 | Box culvert | 0.25 | 2.500 | 4.00 | 7.30 | RRM | G | G | G | | | G | 2.00 | 8.00 | | Yes | Proposed Replacement |
| 78 | 110.020 | Box culvert | 0.20 | 1.000 | 3.40 | 6.00 | RRM | P | P | P | | | P | 1.00 | 2.30 | | Yes | Proposed Replacement |
| 79 | 110.250 | Box culvert | 0.20 | 0.600 | 3.20 | 5.60 | RRM | P | P | P | | | P | 1.00 | 2.00 | | Yes | Proposed Replacement |
| 80 | 110.620 | Box culvert | 0.20 | 1.000 | 3.30 | 6.60 | RRM | P | P | P | | | P | 1.30 | 2.50 | | Yes | Proposed Replacement |
| 81 | 110.665 | Box culvert | 0.20 | 1.000 | 3.60 | 6.60 | RRM | P | P | P | | | P | 1.20 | 2.50 | | Yes | Proposed Replacement |
| 82 | 110.835 | Box culvert | 0.20 | 1.200 | 3.60 | 6.80 | RRM | P | P | P | | | P | 1.30 | 2.50 | | Yes | Proposed Replacement |
| 83 | 110.940 | Box culvert | 0.20 | 0.600 | 3.30 | 5.60 | RRM | P | P | P | | | P | 1.40 | 2.30 | | Yes | Proposed Replacement |
| 84 | 111.088 | Box culvert | 0.35 | 3.800 | 3.50 | 6.70 | RRM | G | G | G | | | G | 6.50 | 15.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 85 | 111.218 | Box culvert | 0.20 | 0.600 | 3.40 | 6.60 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 86 | 111.309 | Box culvert | 0.20 | 0.600 | 3.30 | 6.60 | RRM | P | P | P | | | P | 1.50 | 2,5 | | Yes | Proposed Replacement |
| 87 | 111.579 | Box culvert | 0.20 | 0.600 | 3.90 | 7.30 | RRM | P | P | P | | | P | 1.50 | 2.60 | | Yes | Proposed Replacement |
| 88 | 111.656 | Box culvert | 0.20 | 0.600 | 4.00 | 6.60 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 89 | 111.752 | Box culvert | 0.20 | 0.600 | 3.90 | 6.70 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 90 | 111.817 | Box culvert | 0.20 | 2.000 | 3.60 | 6.30 | RRM | P | P | P | | | P | 1.60 | 3.50 | | Yes | Proposed Replacement |
| 91 | 111.876 | Box culvert | 0.20 | 0.600 | 3.70 | 6.40 | RRM | VP | VP | VP | | | VP | 1.40 | 2.00 | | Yes | Proposed Replacement |
| 92 | 112.042 | Box culvert | 0.20 | 1.000 | 3.60 | 6.30 | RRM | VP | VP | VP | | | | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 93 | 112.160 | Box culvert | 0.20 | 1.000 | 3.50 | 6.60 | RRM | VP | VP | VP | | | VP | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 94 | 112.291 | Box culvert | 0.20 | 0.600 | 3.40 | 6.40 | RRM | VP | VP | VP | | | VP | 1.00 | 1.00 | | Yes | Proposed Replacement |
| 95 | 112.431 | Box culvert | 0.20 | 0.600 | 3.70 | 6.80 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 96 | 112.590 | Box culvert | 0.20 | 0.600 | 4.00 | 6.40 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 97 | 112.755 | Box culvert | 0.20 | 0.600 | 3.40 | 5.60 | RRM | VP | VP | VP | | | | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 98 | 112.869 | Box culvert | 0.20 | 1.500 | 3.70 | 6.90 | RRM | P | P | P | | | VP | 2.00 | 7.20 | | Yes | Proposed Replacement |
| 99 | 112.935 | Box culvert | 0.25 | 2.000 | 3.60 | 6.80 | RRM | P | P | P | | | P | 1.50 | 2.60 | | Yes | Proposed Replacement |
| 100 | 113.005 | Box culvert | 0.20 | 1.500 | 4.10 | 6.80 | RRM | P | P | P | | | P | 1.50 | 3.10 | | Yes | Proposed Replacement |
| 101 | 113.040 | Box culvert | 0.20 | 0.600 | 3.90 | 6.30 | RRM | P | P | P | | | P | 1.40 | 2.90 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 102 | 113.140 | Box culvert | 0.20 | 0.600 | 4.00 | 6.40 | RRM | P | P | P | | | P | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 103 | 113.365 | Box culvert | 0.20 | 0.600 | 3.30 | 7.50 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 104 | 113.570 | Box culvert | 0.20 | 0.600 | 4.00 | 6.50 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 105 | 113.675 | Box culvert | 0.20 | 0.600 | 3.70 | 7.00 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 106 | 113.780 | Box culvert | 0.20 | 0.600 | 3.50 | 6.50 | RRM | P | P | VP | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 107 | 113.960 | Box culvert | 0.20 | 0.600 | 3.50 | 6.90 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 108 | 114.090 | Box culvert | 0.20 | 0.600 | 3.40 | 6.50 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 109 | 114.260 | Box culvert | 0.20 | 0.600 | 3.40 | 6.50 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 110 | 114.395 | Box culvert | 0.20 | 0.600 | 3.50 | 6.60 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 111 | 114.605 | Box culvert | 0.20 | 0.600 | 3.90 | 6.30 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 112 | 114.680 | Box culvert | 0.20 | 1.000 | 3.40 | 6.40 | RRM | P | P | P | | | P | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 113 | 114.807 | Box culvert | 0.20 | 0.600 | 3.80 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 114 | 114.913 | Box culvert | 0.20 | 0.600 | 3.90 | 6.40 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 115 | 115.095 | Box culvert | 0.20 | 0.600 | 3.60 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 116 | 115.195 | Box culvert | 0.20 | 0.600 | 3.50 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 117 | 115.398 | Box culvert | 0.20 | 0.600 | 3.60 | 6.40 | RRM | VP | VP | VP | | | VP | 1.50 | 3.30 | | Yes | Proposed Replacement |
| 118 | 115.480 | Box culvert | 0.20 | 0.600 | 3.50 | 6.30 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 119 | 115.540 | Box culvert | 0.20 | 1.000 | 3.30 | 6.30 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 120 | 115.912 | Box culvert | 0.20 | 0.900 | 3.20 | 6.20 | RRM | P | P | P | | | P | 1.50 | 8.00 | | Yes | Proposed Replacement |
| 121 | 115.965 | Box culvert | 0.20 | 1.000 | 3.30 | 6.30 | RRM | P | P | P | | | P | 1.50 | 7.00 | | Yes | Proposed Replacement |
| 122 | 116.035 | Box culvert | 0.35 | 4.000 | 3.40 | 6.80 | RRM | P | P | P | | | P | 7.00 | 20.00 | | Yes | Proposed Replacement |
| 123 | 116.088 | Box culvert | 0.20 | 0.600 | 3.20 | 6.30 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 124 | 116.175 | Box culvert | 0.25 | 2.000 | 4.40 | 6.60 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 125 | 116.548 | Box culvert | 0.20 | 0.600 | 3.40 | 6.10 | RRM | VP | VP | VP | | | NE | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 126 | 116.647 | Box culvert | 0.20 | 1.000 | 3.50 | 6.20 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 127 | 116.897 | Box culvert | 0.20 | 0.600 | 3.40 | 7.20 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 128 | 116.987 | Box culvert | 0.20 | 0.600 | 3.50 | 6.70 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 129 | 117.189 | Box culvert | 0.20 | 0.600 | 4.00 | 6.80 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 130 | 117.307 | Box culvert | 0.20 | 0.600 | 3.20 | 5.20 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 131 | 117.644 | Box culvert | 0.20 | 0.600 | 3.20 | 6.80 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 132 | 117.720 | Box culvert | 0.20 | 1.000 | 3.20 | 5.50 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 133 | 117.840 | Box culvert | 0.20 | 0.600 | 3.20 | 5.40 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 134 | 118.038 | Box culvert | 0.20 | 1.000 | 4.00 | 6.60 | RRM | P | P | P | | | P | 1.50 | 7.00 | | Yes | Proposed Replacement |
| 135 | 118.140 | Box culvert | 0.25 | 2.500 | 4.10 | 7.40 | RRM | P | P | P | | | P | 2.50 | 13.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 136 | 118.298 | Box culvert | 0.20 | 1.000 | 3.90 | 6.70 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 137 | 118.451 | Box culvert | 0.20 | 1.000 | 3.70 | 6.60 | RRM | P | P | P | | | P | 2.00 | 5.50 | | Yes | Proposed Replacement |
| 138 | 118.517 | Box culvert | 0.20 | 1.000 | 3.50 | 6.60 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 139 | 118.623 | Box culvert | 0.20 | 1.000 | 4.00 | 6.40 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 140 | 118.717 | Box culvert | 0.20 | 1.000 | 4.00 | 6.60 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 141 | 118.768 | Box culvert | 0.25 | 2.500 | 4.00 | 7.10 | RRM | P | P | P | | | P | 4.00 | 15.00 | | Yes | Proposed Replacement |
| 142 | 119.157 | Box culvert | 0.20 | 1.000 | 4.30 | 6.60 | RRM | P | P | F | | | F | 2.00 | 10.00 | | Yes | Proposed Replacement |
| 143 | 119.267 | Box culvert | 0.20 | 1.000 | 4.00 | 6.60 | RRM | P | P | P | | | P | 1.50 | 4.00 | | Yes | Proposed Replacement |
| 144 | 119.551 | Box culvert | 0.25 | 2.500 | 4.00 | 6.60 | RRM | P | P | P | | | P | 3.00 | 3.00 | | Yes | Proposed Replacement |
| 145 | 119.645 | Box culvert | 0.20 | 1.200 | 3.40 | 6.60 | RRM | P | P | P | | | P | 1.50 | 7.00 | | Yes | Proposed Replacement |
| 146 | 119.690 | Box culvert | 0.20 | 1.200 | 3.30 | 6.50 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 147 | 119.847 | Box culvert | 0.20 | 1.000 | 4.00 | 6.40 | RRM | P | P | F | | | F | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 148 | 120.093 | Box culvert | 0.20 | 1.000 | 4.80 | 6.90 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 149 | 120.252 | Box culvert | 0.25 | 2.500 | 3.40 | 6.80 | RRM | P | P | P | | | P | 3.00 | 5.00 | | Yes | Proposed Replacement |
| 150 | 120.448 | Box culvert | 0.20 | 2.000 | 3.50 | 6.60 | RRM | P | P | P | | | P | 2.50 | 8.00 | | Yes | Proposed Replacement |
| 151 | 120.660 | Box culvert | 0.20 | 2.000 | 4.10 | 7.80 | RRM | P | P | P | | | P | 2.00 | 5.00 | | Yes | Proposed Replacement |
| 152 | 120.760 | Box culvert | 0.20 | 0.600 | 3.60 | 6.60 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 153 | 120.990 | Box culvert | 0.30 | 3.000 | 4.10 | 6.60 | RRM | P | P | P | | | P | 2.00 | 7.00 | | Yes | Proposed Replacement |
| 154 | 121.193 | Box culvert | 0.20 | 0.600 | 3.40 | 6.40 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 155 | 121.297 | Box culvert | 0.20 | 1.100 | 3.40 | 6.20 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 156 | 121.350 | Box culvert | 0.20 | 2.000 | 3.60 | 6.60 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 157 | 121.620 | Box culvert | 0.20 | 1.200 | 3.60 | 6.60 | RRM | P | P | P | | | P | 2.00 | 7.00 | | Yes | Proposed Replacement |
| 158 | 121.735 | Box culvert | 0.20 | 1.100 | 4.00 | 6.70 | RRM | P | P | P | | | P | 2.50 | 6.50 | | Yes | Proposed Replacement |
| 159 | 121.985 | Box culvert | 0.20 | 1.000 | 3.80 | 5.60 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 160 | 122.180 | Box culvert | 0.20 | 0.600 | 3.30 | 5.90 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 161 | 122.303 | Box culvert | 0.20 | 0.600 | 3.40 | 6.00 | RRM | P | P | P | | | P | 1.50 | 2.60 | | Yes | Proposed Replacement |
| 162 | 122.425 | Box culvert | 0.20 | 1.000 | 3.50 | 6.80 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 163 | 122.572 | Box culvert | 0.20 | 0.600 | 3.40 | 6.20 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 164 | 122.720 | Box culvert | 0.20 | 0.700 | 3.30 | 6.30 | RRM | | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 165 | 122.816 | Box culvert | 0.30 | 3.000 | 3.30 | 6.30 | RRM | P | P | P | | | P | 3.00 | 12.00 | | Yes | Proposed Replacement |
| 166 | 122.890 | Box culvert | 0.20 | 1.000 | 3.20 | 6.20 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 167 | 122.970 | Box culvert | 0.20 | 0.600 | 3.20 | 6.00 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 168 | 123.044 | Box culvert | 0.25 | 2.100 | 3.40 | 5.90 | RRM | P | P | P | | | P | 1.50 | 8.00 | | Yes | Proposed Replacement |
| 169 | 123.102 | Box culvert | 0.20 | 1.000 | 3.30 | 5.70 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 170 | 123.318 | Box culvert | 0.20 | 1.000 | 3.40 | 5.90 | RRM | P | P | P | | | P | 2.00 | 7.30 | | Yes | Proposed Replacement |
| 171 | 123.480 | Box culvert | 0.25 | 2.000 | 3.70 | 6.30 | RRM | P | P | P | | | P | 3.00 | 9.40 | | Yes | Proposed Replacement |
| 172 | 123.530 | Box culvert | 0.35 | 4.000 | 4.20 | 7.20 | RRM | P | P | P | | | P | 7.00 | 15.20 | | Yes | Proposed Replacement |
| 173 | 123.645 | Box culvert | 0.20 | 1.000 | 3.40 | 6.40 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 174 | 123.824 | Box culvert | 0.20 | 0.600 | 3.40 | 6.30 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 175 | 123.969 | Box culvert | 0.20 | 0.600 | 3.30 | 6.20 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 176 | 124.227 | Box culvert | 0.20 | 1.000 | 3.40 | 6.20 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 177 | 124.342 | Box culvert | 0.20 | 0.600 | 3.60 | 5.90 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 178 | 124.507 | Box culvert | 0.25 | 2.000 | 3.80 | 6.90 | RRM | P | P | P | | | P | 2.50 | 7.30 | | Yes | Proposed Replacement |
| 179 | 124.536 | Box culvert | 0.20 | 1.000 | 3.30 | 6.30 | RRM | P | P | P | | | P | 2.00 | 5.20 | | Yes | Proposed Replacement |
| 180 | 124.641 | Box culvert | 0.20 | 1.000 | 3.30 | 6.30 | RRM | P | P | P | | | P | 1.50 | 4.30 | | Yes | Proposed Replacement |
| 181 | 124.809 | Box culvert | 0.20 | 0.600 | 3.70 | 6.30 | RRM | P | P | P | | | P | 1.50 | 3.10 | | Yes | Proposed Replacement |
| 182 | 124.912 | Box culvert | 0.20 | 0.700 | 3.60 | 6.30 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 183 | 124.963 | Box culvert | 0.20 | 1.100 | 3.80 | 6.60 | RRM | P | P | P | | | P | 1.70 | 3.00 | | Yes | Proposed Replacement |
| 184 | 125.033 | Box culvert | 0.20 | 1.000 | 3.60 | 6.50 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 185 | 125.325 | Box culvert | 0.20 | 1.100 | 3.50 | 6.20 | RRM | P | P | P | | | P | 1.50 | 2.60 | | Yes | Proposed Replacement |
| 186 | 125.570 | Box culvert | 0.25 | 2.000 | 3.40 | 6.10 | RRM | P | P | P | | | P | 2.00 | 8.30 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 187 | 125.660 | Box culvert | 0.20 | 0.700 | 3.40 | 5.90 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 188 | 125.830 | Box culvert | 0.20 | 1.200 | 4.00 | 6.60 | RRM | P | P | P | | | P | 2.00 | 2.00 | | Yes | Proposed Replacement |
| 189 | 125.885 | Box culvert | 0.20 | 1.000 | 3.90 | 6.60 | RRM | P | P | P | | | P | 1.50 | 3.40 | | Yes | Proposed Replacement |
| 190 | 126.153 | Box culvert | 0.25 | 2.000 | 3.70 | 6.70 | RRM | P | P | P | | | P | 3.50 | 8.20 | | Yes | Proposed Replacement |
| 191 | 126.265 | Box culvert | 0.20 | 1.000 | 3.20 | 6.00 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 192 | 126.300 | Box culvert | 0.20 | 1.200 | 3.40 | 6.30 | RRM | P | P | P | | | P | 1.50 | 6.30 | | Yes | Proposed Replacement |
| 193 | 126.479 | Box culvert | 0.20 | 1.000 | 3.30 | 5.90 | RRM | P | P | P | | | P | 1.50 | 10.30 | | Yes | Proposed Replacement |
| 194 | 126.515 | Box culvert | 0.20 | 0.600 | 3.30 | 6.00 | RRM | VP | VP | VP | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 195 | 126.720 | Box culvert | 0.20 | 1.000 | 3.50 | 6.60 | RRM | VP | VP | VP | | | VP | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 196 | 126.785 | Box culvert | 0.20 | 1.000 | 3.40 | 6.70 | RRM | VP | VP | VP | | | VP | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 197 | 126.802 | Box culvert | 0.20 | 2.000 | 3.50 | 6.90 | RRM | P | P | P | | | P | 1.50 | 3.90 | | Yes | Proposed Replacement |
| 198 | 126.909 | Box culvert | 0.20 | 1.000 | 3.30 | 6.30 | RRM | P | P | P | | | P | 3.00 | 1.80 | | Yes | Proposed Replacement |
| 199 | 127.347 | Box culvert | 0.20 | 1.000 | 3.30 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 200 | 127.475 | Box culvert | 0.20 | 0.600 | 3.30 | 5.60 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 201 | 127.600 | Box culvert | 0.20 | 0.600 | 3.20 | 5.80 | RRM | VP | VP | VP | | | VP | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 202 | 128.008 | Box culvert | 0.20 | 1.000 | 3.50 | 5.60 | RRM | VP | VP | VP | | | VP | 1.50 | 3.20 | | Yes | Proposed Replacement |
| 203 | 128.180 | Box culvert | 0.20 | 1.000 | 3.60 | 5.80 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 204 | 128.455 | Box culvert | 0.20 | 1.000 | 3.40 | 5.80 | RRM | VP | VP | VP | | | VP | 1.50 | 2.60 | | Yes | Proposed Replacement |
| 205 | 128.566 | Box culvert | 0.20 | 1.000 | 3.50 | 6.60 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 206 | 128.710 | Box culvert | 0.20 | 1.000 | 3.30 | 5.90 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 207 | 129.021 | Box culvert | 0.20 | 1.000 | 4.10 | 6.80 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 208 | 129.140 | Box culvert | 0.20 | 1.000 | 4.30 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 209 | 129.320 | Box culvert | 0.25 | 2.000 | 4.60 | 7.00 | RRM | VP | VP | VP | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 210 | 129.648 | Box culvert | 0.20 | 1.000 | 3.50 | 5.90 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 211 | 130.035 | Box culvert | 0.20 | 1.000 | 4.90 | 6.90 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 212 | 130.169 | Box culvert | 0.20 | 1.000 | 4.30 | 6.80 | RRM | P | P | P | | | P | 2.20 | 5.20 | | Yes | Proposed Replacement |
| 213 | 130.265 | Box culvert | 0.20 | 1.000 | 3.60 | 6.50 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 214 | 130.660 | Box culvert | 0.20 | 0.600 | 3.30 | 6.40 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 215 | 130.700 | Box culvert | 0.20 | 1.000 | 3.80 | 5.60 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 216 | 130.925 | Box culvert | 0.20 | 1.000 | 4.10 | 6.60 | RRM | P | P | P | | | P | 1.50 | 4.20 | | Yes | Proposed Replacement |
| 217 | 131.031 | Box culvert | 0.20 | 1.000 | 4.30 | 6.70 | RRM | P | P | P | | | P | 1.50 | 9.80 | | Yes | Proposed Replacement |
| 218 | 131.334 | Box culvert | 0.20 | 1.000 | 4.30 | 6.60 | RRM | P | P | P | | | P | 1.50 | 2.60 | | Yes | Proposed Replacement |
| 219 | 131.520 | Box culvert | 0.20 | 1.300 | 3.40 | 5.80 | RRM | P | P | P | | | P | 1.50 | 1.90 | | Yes | Proposed Replacement |
| 220 | 131.610 | Box culvert | 0.20 | 1.000 | 4.50 | 6.60 | RRM | P | P | P | | | P | 1.50 | 2.10 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 221 | 131.804 | Box culvert | 0.20 | 1.000 | 4.00 | 7.30 | RRM | P | P | P | | | P | 1.50 | 3.20 | | Yes | Proposed Replacement |
| 222 | 131.983 | Box culvert | 0.20 | 0.600 | 3.50 | 5.70 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 223 | 132.148 | Box culvert | 0.25 | 2.000 | 4.30 | 6.50 | RRM | P | P | P | | | P | 2.50 | 8.40 | | Yes | Proposed Replacement |
| 224 | 132.280 | Box culvert | 0.20 | 1.000 | 4.10 | 7.80 | RRM | P | P | P | | | P | 2.50 | 12.50 | | Yes | Proposed Replacement |
| 225 | 132.305 | Box culvert | 0.20 | 1.000 | 4.10 | 6.80 | RRM | P | P | P | | | P | 1.50 | 8.30 | | Yes | Proposed Replacement |
| 226 | 132.755 | Box culvert | 0.30 | 2.500 | 3.80 | 6.40 | RRM | P | P | P | | | P | 3.00 | 20.30 | | Yes | Proposed Replacement |
| 227 | 132.805 | Box culvert | 0.20 | 1.500 | 4.10 | 6.20 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 228 | 132.995 | Box culvert | 0.20 | 1.500 | 4.00 | 6.10 | RRM | P | P | P | | | P | 1.50 | 5.40 | | Yes | Proposed Replacement |
| 229 | 133.090 | Box culvert | 0.20 | 1.500 | 4.10 | 6.50 | RRM | P | P | P | | | P | 3.00 | 19.80 | | Yes | Proposed Replacement |
| 230 | 133.165 | Box culvert | 0.30 | 2.500 | 4.30 | 6.80 | RRM | P | P | P | | | P | 8.00 | 21.70 | | Yes | Proposed Replacement |
| 231 | 133.260 | Box culvert | 0.20 | 0.600 | 4.30 | 6.80 | RRM | P | P | P | | | P | 1.50 | 4.50 | | Yes | Proposed Replacement |
| 232 | 133.320 | Box culvert | 0.20 | 1.000 | 3.80 | 6.40 | RRM | P | P | P | | | P | 1.50 | 3.20 | | Yes | Proposed Replacement |
| 233 | 133.445 | Box culvert | 0.20 | 0.600 | 3.50 | 6.10 | RRM | P | P | P | | | P | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 234 | 133.640 | Box culvert | 0.20 | 1.000 | 4.00 | 6.10 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 235 | 133.840 | Box culvert | 0.20 | 1.000 | 4.00 | 6.60 | RRM | P | P | P | | | P | 1.50 | 9.90 | | Yes | Proposed Replacement |
| 236 | 133.905 | Box culvert | 0.20 | 1.000 | 3.50 | 6.10 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 237 | 134.175 | Box culvert | 0.20 | 0.600 | 3.40 | 6.10 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 238 | 134.370 | Box culvert | 0.20 | 1.000 | 3.30 | 5.70 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 239 | 134.465 | Box culvert | 0.20 | 0.600 | 3.30 | 6.40 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 240 | 134.610 | Box culvert | 0.20 | 1.000 | 3.60 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 241 | 134.750 | Box culvert | 0.20 | 0.600 | 3.50 | 5.80 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 242 | 134.820 | Box culvert | 0.20 | 0.600 | 3.80 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 243 | 135.043 | Box culvert | 0.20 | 1.000 | 3.70 | 6.60 | RRM | VP | VP | VP | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 244 | 135.070 | Box culvert | 0.20 | 0.600 | 3.80 | 6.40 | RRM | VP | VP | VP | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 245 | 135.350 | Box culvert | 0.20 | 1.000 | 3.80 | 6.20 | RRM | P | P | P | | | P | 1.50 | 4.50 | | Yes | Proposed Replacement |
| 246 | 135.490 | Box culvert | 0.20 | 1.000 | 4.00 | 6.40 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 247 | 135.600 | Box culvert | 0.20 | 1.000 | 4.00 | 6.40 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 248 | 135.660 | Box culvert | 0.25 | 2.000 | 4.00 | 6.60 | RRM | P | P | P | | | P | 2.00 | 8.00 | | Yes | Proposed Replacement |
| 249 | 135.947 | Box culvert | 0.20 | 1.000 | 4.00 | 6.60 | RRM | P | P | P | | | P | 2.20 | 4.50 | | Yes | Proposed Replacement |
| 250 | 136.065 | Box culvert | 0.20 | 1.000 | 3.40 | 6.60 | RRM | F | F | F | | | VP | 4.50 | 20.50 | | Yes | Proposed Replacement |
| 251 | 136.130 | Box culvert | 0.20 | 1.000 | 3.50 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 252 | 136.254 | Box culvert | 0.35 | 4.000 | 4.00 | 6.80 | RRM | VP | VP | VP | | | VP | 6.00 | 15.30 | | Yes | Proposed Replacement |
| 253 | 136.400 | Box culvert | 0.20 | 2.000 | 4.00 | 6.60 | RRM | P | P | P | | | P | 3.20 | 7.40 | | Yes | Proposed Replacement |
| 254 | 136.550 | Box culvert | 0.20 | 1.000 | 3.80 | 6.40 | RRM | P | P | P | | | NE | 1.50 | 2.60 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 255 | 136.650 | Box culvert | 0.20 | 1.000 | 3.80 | 6.40 | RRM | P | P | P | | | P | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 256 | 136.890 | Box culvert | 0.20 | 1.500 | 4.00 | 6.60 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 257 | 136.950 | Box culvert | 0.20 | 1.500 | 3.90 | 6.60 | RRM | P | P | P | | | P | 3.60 | 9.20 | | Yes | Proposed Replacement |
| 258 | 137.062 | Box culvert | 0.20 | 1.000 | 4.00 | 6.40 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 259 | 137.092 | Box culvert | 0.35 | 4.000 | 4.30 | 6.60 | RRM | P | P | P | | | P | 5.00 | 2.10 | | Yes | Proposed Replacement |
| 260 | 137.195 | Box culvert | 0.20 | 1.000 | 4.00 | 6.60 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 261 | 137.255 | Box culvert | 0.20 | 1.000 | 4.00 | 6.60 | RRM | P | P | P | | | NE | 1.50 | 7.00 | | Yes | Proposed Replacement |
| 262 | 137.385 | Box culvert | 0.35 | 4.000 | 4.00 | 7.10 | RRM | P | P | P | | | P | 2.50 | 20.20 | | Yes | Proposed Replacement |
| 263 | 137.497 | Box culvert | 0.20 | 1.300 | 4.60 | 6.60 | RRM | P | P | P | | | P | 2.20 | 8.30 | | Yes | Proposed Replacement |
| 264 | 137.512 | Box culvert | 0.20 | 1.500 | 4.40 | 6.60 | RRM | P | P | P | | | P | 2.00 | 15.30 | | Yes | Proposed Replacement |
| 265 | 137.752 | Box culvert | 0.20 | 1.500 | 4.40 | 6.60 | RRM | P | P | P | | | P | 3.20 | 20.50 | | Yes | Proposed Replacement |
| 266 | 137.861 | Box culvert | 0.20 | 1.000 | 3.90 | 6.40 | RRM | P | P | P | | | P | 1.50 | 8.20 | | Yes | Proposed Replacement |
| 267 | 138.005 | Box culvert | 0.20 | 1.500 | 4.50 | 6.90 | RRM | P | P | P | | | P | 1.50 | 8.50 | | Yes | Proposed Replacement |
| 268 | 138.092 | Box culvert | 0.20 | 1.000 | 4.00 | 6.60 | RRM | F | F | F | | | F | 1.50 | 4.00 | | Yes | Proposed Replacement |
| 269 | 138.190 | Box culvert | 0.20 | 1.500 | 4.30 | 6.60 | RRM | F | F | F | | | F | 1.50 | 4.20 | | Yes | Proposed Replacement |
| 270 | 138.307 | Box culvert | 0.20 | 1.000 | 3.40 | 5.60 | RRM | F | F | F | | | F | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 271 | 138.587 | Box culvert | 0.20 | 1.000 | 3.40 | 6.40 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 272 | 138.658 | Box culvert | 0.25 | 2.000 | 4.00 | 6.60 | RRM | P | P | P | | | P | 5.50 | 13.00 | | Yes | Proposed Replacement |
| 273 | 138.785 | Box culvert | 0.20 | 1.500 | 3.40 | 5.60 | RRM | P | P | P | | | P | 2.00 | 9.50 | | Yes | Proposed Replacement |
| 274 | 138.960 | Box culvert | 0.20 | 1.000 | 3.30 | 5.60 | RRM | P | P | P | | | P | 1.50 | 6.20 | | Yes | Proposed Replacement |
| 275 | 139.150 | Box culvert | 0.20 | 1.000 | 3.50 | 5.70 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 276 | 139.270 | Box culvert | 0.20 | 2.000 | 4.00 | 6.70 | RRM | P | P | P | | | P | 1.00 | 3.30 | | Yes | Proposed Replacement |
| 277 | 139.419 | Box culvert | 0.20 | 1.000 | 4.40 | 5.90 | RRM | P | P | P | | | P | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 278 | 139.600 | Box culvert | 0.20 | 1.500 | 4.50 | 6.60 | RRM | P | P | P | | | P | 1.50 | 12.30 | | Yes | Proposed Replacement |
| 279 | 139.815 | Box culvert | 0.20 | 2.500 | 4.40 | 6.80 | RRM | P | P | P | | | P | 1.50 | 6.10 | | Yes | Proposed Replacement |
| 280 | 139.890 | Box culvert | 0.20 | 2.500 | 4.20 | 7.00 | RRM | P | P | P | | | P | 3.00 | 13.50 | | Yes | Proposed Replacement |
| 281 | 140.125 | Box culvert | 0.20 | 1.000 | 3.80 | 6.20 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 282 | 140.195 | Box culvert | 0.25 | 2.000 | 4.50 | 7.00 | RRM | P | P | P | | | P | 2.50 | 13.40 | | Yes | Proposed Replacement |
| 283 | 140.310 | Box culvert | 0.20 | 1.500 | 4.10 | 6.60 | RRM | P | P | P | | | P | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 284 | 140.420 | Box culvert | 0.20 | 1.000 | 4.00 | 7.00 | RRM | P | P | P | | | P | 1.50 | 4.00 | | Yes | Proposed Replacement |
| 285 | 140.555 | Box culvert | 0.20 | 1.000 | 4.20 | 6.30 | RRM | P | P | P | | | P | 1.50 | 5.30 | | Yes | Proposed Replacement |
| 286 | 140.800 | Box culvert | 0.20 | 1.000 | 4.80 | 6.80 | RRM | VP | VP | VP | | | VP | 1.50 | 5.30 | | Yes | Proposed Replacement |
| 287 | 140.900 | Box culvert | 0.20 | 1.000 | 4.30 | 6.60 | RRM | VP | VP | VP | | | VP | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 288 | 140.940 | Box culvert | 0.20 | 1.000 | 4.30 | 8.10 | RRM | VP | VP | VP | | | VP | 1.50 | 10.60 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 289 | 141.030 | Box culvert | 0.20 | 1.000 | 4.20 | 7.10 | RRM | P | P | P | | | P | 1.50 | 7.30 | | Yes | Proposed Replacement |
| 290 | 141.186 | Box culvert | 0.20 | 1.000 | 3.50 | 5.70 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 291 | 141.236 | Box culvert | 0.20 | 1.500 | 3.40 | 5.50 | RRM | P | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 292 | 141.600 | Box culvert | 0.20 | 1.000 | 3.30 | 6.20 | RRM | VP | P | P | | | NE | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 293 | 141.620 | Box culvert | 0.20 | 1.000 | 3.20 | 5.60 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 294 | 141.720 | Box culvert | 0.20 | 1.000 | 3.40 | 5.60 | RRM | P | P | P | | | P | 1.50 | 4.00 | | Yes | Proposed Replacement |
| 295 | 142.030 | Box culvert | 0.30 | 4.000 | 3.50 | 5.80 | RRM | P | P | P | | | VP | 4.50 | 8.20 | | Yes | Proposed Replacement |
| 296 | 142.155 | Box culvert | 0.20 | 1.000 | 3.40 | 6.20 | RRM | P | P | P | | | VP | 3.00 | 7.20 | | Yes | Proposed Replacement |
| 297 | 142.215 | Box culvert | 0.20 | 1.000 | 3.20 | 6.10 | RRM | VP | VP | VP | | | NE | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 298 | 142.370 | Box culvert | 0.20 | 3.400 | 3.40 | 6.10 | RRM | P | P | P | | | P | 1.50 | 6.00 | | Yes | Proposed Replacement |
| 299 | 142.450 | Box culvert | 0.20 | 1.000 | 3.70 | 5.90 | RRM | P | P | P | | | P | 1.50 | 4.00 | | Yes | Proposed Replacement |
| 300 | 142.542 | Box culvert | 0.20 | 1.000 | 3.60 | 6.60 | RRM | P | P | P | | | P | 1.50 | 6.00 | | Yes | Proposed Replacement |
| 301 | 142.590 | Box culvert | 0.20 | 1.000 | 3.50 | 6.50 | RRM | VP | VP | VP | | | NE | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 302 | 142.730 | Box culvert | 0.20 | 1.000 | 3.60 | 6.10 | RRM | VP | VP | VP | | | NE | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 303 | 142.950 | Box culvert | 0.20 | 1.000 | 3.60 | 6.30 | RRM | P | P | P | | | P | 1.50 | 5.30 | | Yes | Proposed Replacement |
| 304 | 143.305 | Box culvert | 0.25 | 2.500 | 4.00 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 6.00 | | Yes | Proposed Replacement |
| 305 | 143.493 | Box culvert | 0.20 | 1.000 | 3.60 | 5.60 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 306 | 143.843 | Box culvert | 0.20 | 1.000 | 3.20 | 5.90 | RRM | VP | VP | VP | | | VP | 3.50 | 2.00 | | Yes | Proposed Replacement |
| 307 | 143.953 | Box culvert | 0.20 | 1.000 | 3.40 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 308 | 144.148 | Box culvert | 0.20 | 1.000 | 3.50 | 6.80 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 309 | 144.182 | Box culvert | 0.20 | 1.000 | 4.20 | 7.10 | RRM | P | P | P | | | VP | 1.50 | 7.30 | | Yes | Proposed Replacement |
| 310 | 144.273 | Box culvert | 0.20 | 2.500 | 4.40 | 6.60 | RRM | P | P | P | | | VP | 1.50 | 10.30 | | Yes | Proposed Replacement |
| 311 | 144.345 | Box culvert | 0.20 | 1.000 | 4.20 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 4.00 | | Yes | Proposed Replacement |
| 312 | 144.423 | Box culvert | 0.25 | 2.500 | 4.20 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 6.30 | | Yes | Proposed Replacement |
| 313 | 144.610 | Box culvert | 0.25 | 2.000 | 4.20 | 6.40 | RRM | P | P | P | | | P | 2.00 | 7.40 | | Yes | Proposed Replacement |
| 314 | 144.645 | Box culvert | 0.20 | 1.000 | 4.50 | 6.50 | RRM | P | P | P | | | P | 2.00 | 5.00 | | Yes | Proposed Replacement |
| 315 | 144.698 | Box culvert | 0.20 | 1.000 | 4.30 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 4.10 | | Yes | Proposed Replacement |
| 316 | 144.850 | Box culvert | 0.25 | 2.500 | 4.40 | 6.80 | RRM | VP | VP | VP | | | VP | 1.50 | 7.00 | | Yes | Proposed Replacement |
| 317 | 144.935 | Box culvert | 0.20 | 1.500 | 4.30 | 6.60 | RRM | VP | VP | VP | | | VP | 1.50 | 6.40 | | Yes | Proposed Replacement |
| 318 | 145.300 | Box culvert | 0.20 | 1.000 | 3.30 | 5.60 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 319 | 145.390 | Box culvert | 0.20 | 1.500 | 3.20 | 5.10 | RRM | VP | VP | VP | | | VP | 1.50 | 4.30 | | Yes | Proposed Replacement |
| 320 | 145.500 | Box culvert | 0.25 | 2.000 | 3.30 | 6.60 | RRM | VP | VP | VP | | | NE | 2.00 | 15.50 | | Yes | Proposed Replacement |
| 321 | 145.710 | Box culvert | 0.20 | 1.000 | 3.40 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 4.60 | | Yes | Proposed Replacement |
| 322 | 145.810 | Box culvert | 0.35 | 4.000 | 3.50 | 6.40 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 323 | 145.880 | Box culvert | 0.20 | 1.500 | 3.60 | 6.60 | RRM | P | P | P | | | P | 2.20 | 7.10 | | Yes | Proposed Replacement |
| 324 | 146.040 | Box culvert | 0.20 | 1.000 | 3.70 | 6.60 | RRM | P | P | P | | | NE | 1.50 | 3.20 | | Yes | Proposed Replacement |
| 325 | 146.110 | Box culvert | 0.20 | 1.000 | 3.60 | 6.10 | RRM | P | P | P | | | VP | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 326 | 146.275 | Box culvert | 0.25 | 2.000 | 3.70 | 6.20 | RRM | P | P | P | | | VP | 1.50 | 7.30 | | Yes | Proposed Replacement |
| 327 | 146.375 | Box culvert | 0.20 | 1.000 | 3.90 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 3.20 | | Yes | Proposed Replacement |
| 328 | 146.525 | Box culvert | 0.25 | 2.000 | 3.50 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 3.10 | | Yes | Proposed Replacement |
| 329 | 146.706 | Box culvert | 0.20 | 1.500 | 3.50 | 6.10 | RRM | VP | VP | VP | | | VP | 2.50 | 4.10 | | Yes | Proposed Replacement |
| 330 | 146.765 | Box culvert | 0.20 | 1.000 | 3.50 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 2.30 | | Yes | Proposed Replacement |
| 331 | 146.872 | Box culvert | 0.20 | 1.000 | 3.40 | 5.90 | RRM | VP | VP | VP | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 332 | 147.062 | Box culvert | 0.20 | 1.000 | 3.50 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 4.50 | | Yes | Proposed Replacement |
| 333 | 147.237 | Box culvert | 0.20 | 0.600 | 3.20 | 5.90 | RRM | VP | VP | VP | | | VP | 1.50 | 2.30 | | Yes | Proposed Replacement |
| 334 | 147.365 | Box culvert | 0.20 | 1.000 | 3.20 | 5.60 | RRM | VP | VP | VP | | | VP | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 335 | 147.428 | Box culvert | 0.20 | 1.000 | 3.30 | 5.60 | RRM | VP | VP | VP | | | VP | 1.50 | 4.50 | | Yes | Proposed Replacement |
| 336 | 147.628 | Box culvert | 0.20 | 1.000 | 3.90 | 6.60 | RRM | P | P | P | | | P | 1.50 | 6.00 | | Yes | Proposed Replacement |
| 337 | 147.840 | Box culvert | 0.20 | 0.600 | 3.40 | 6.00 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 338 | 147.980 | Box culvert | 0.20 | 1.000 | 3.50 | 6.10 | RRM | P | P | P | | | P | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 339 | 148.150 | Box culvert | 0.20 | 0.600 | 3.40 | 5.80 | RRM | P | P | P | | | P | 1.50 | 4.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 340 | 148.355 | Box culvert | 0.20 | 1.000 | 3.50 | 6.10 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 341 | 148.520 | Box culvert | 0.20 | 1.000 | 3.50 | 5.60 | RRM | VP | P | P | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 342 | 148.850 | Box culvert | 0.20 | 0.900 | 3.50 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 343 | 148.950 | Box culvert | 0.20 | 0.900 | 3.50 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 344 | 149.063 | Box culvert | 0.20 | 1.000 | 3.50 | 5.90 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 345 | 149.180 | Box culvert | 0.20 | 0.900 | 3.60 | 5.80 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 346 | 149.345 | Box culvert | 0.20 | 0.900 | 3.40 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 347 | 149.453 | Box culvert | 0.20 | 0.700 | 3.40 | 6.40 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 348 | 149.575 | Box culvert | 0.20 | 1.000 | 3.40 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 349 | 149.620 | Box culvert | 0.20 | 0.600 | 3.50 | 6.40 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 350 | 149.810 | Box culvert | 0.25 | 2.000 | 3.40 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 351 | 149.845 | Box culvert | 0.20 | 1.000 | 3.50 | 6.00 | RRM | P | P | P | | | P | 1.50 | 5.00 | | Yes | Proposed Replacement |
| 352 | 150.025 | Box culvert | 0.20 | 1.000 | 3.50 | 6.10 | RRM | P | P | P | | | P | 1.50 | 7.20 | | Yes | Proposed Replacement |
| 353 | 150.068 | Box culvert | 0.20 | 1.200 | 3.80 | 6.40 | RRM | P | P | P | | | P | 2.50 | 5.00 | | Yes | Proposed Replacement |
| 354 | 150.185 | Box culvert | 0.25 | 2.500 | 3.90 | 6.50 | RRM | P | P | P | | | P | 4.50 | 9.50 | | Yes | Proposed Replacement |
| 355 | 150.345 | Box culvert | 0.20 | 1.200 | 3.70 | 6.10 | RRM | P | P | P | | | P | 2.70 | 6.30 | | Yes | Proposed Replacement |
| 356 | 150.575 | Box culvert | 0.20 | 2.500 | 3.50 | 5.90 | RRM | P | P | P | | | P | 2.70 | 12.30 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 357 | 150.740 | Box culvert | 0.20 | 1.000 | 4.30 | 6.30 | RRM | P | P | P | | | P | 1.50 | 5.30 | | Yes | Proposed Replacement |
| 358 | 150.820 | Box culvert | 0.20 | 1.000 | 3.80 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 359 | 150.875 | Box culvert | 0.20 | 1.000 | 3.90 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 360 | 151.007 | Box culvert | 0.20 | 0.800 | 3.50 | 5.70 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 361 | 151.188 | Box culvert | 0.20 | 1.000 | 4.50 | 6.80 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 362 | 151.325 | Box culvert | 0.20 | 0.700 | 4.20 | 6.30 | RRM | P | P | P | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 363 | 151.750 | Box culvert | 0.20 | 1.000 | 4.10 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 364 | 151.970 | Box culvert | 0.20 | 0.800 | 4.20 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 365 | 152.057 | Box culvert | 0.20 | 1.000 | 4.40 | 6.90 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 366 | 152.120 | Box culvert | 0.20 | 1.000 | 4.30 | 6.70 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 367 | 152.183 | Box culvert | 0.20 | 1.000 | 4.10 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 368 | 152.305 | Box culvert | 0.20 | 1.000 | 3.50 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 369 | 152.400 | Box culvert | 0.20 | 1.000 | 3.60 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 370 | 152.451 | Box culvert | 0.20 | 1.000 | 4.30 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 371 | 152.567 | Box culvert | 0.20 | 1.000 | 4.50 | 6.30 | RRM | VP | VP | VP | | | VP | 2.00 | 2.00 | | Yes | Proposed Replacement |
| 372 | 152.623 | Box culvert | 0.20 | 1.000 | 4.00 | 6.30 | RRM | P | P | P | | | P | 2.00 | 2.50 | | Yes | Proposed Replacement |
| 373 | 152.738 | Box culvert | 0.20 | 1.000 | 4.30 | 6.60 | RRM | P | P | P | | | P | 2.00 | 3.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 374 | 152.852 | Box culvert | 0.20 | 1.000 | 4.20 | 6.50 | RRM | P | P | P | | | P | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 375 | 153.150 | Box culvert | 0.20 | 1.000 | 3.20 | 5.00 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 376 | 153.218 | Box culvert | 0.25 | 2.000 | 3.30 | 5.70 | RRM | P | P | P | | | VP | 2.00 | 10.00 | | Yes | Proposed Replacement |
| 377 | 153.380 | Box culvert | 0.20 | 1.600 | 3.20 | 6.20 | RRM | P | VP | VP | | | VP | 2.00 | 2.00 | | Yes | Proposed Replacement |
| 378 | 153.470 | Box culvert | 0.20 | 1.500 | 3.10 | 5.90 | RRM | P | P | P | | | VP | 4.00 | 2.50 | | Yes | Proposed Replacement |
| 379 | 153.660 | Box culvert | 0.20 | 1.500 | 3.20 | 6.00 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 380 | 153.816 | Box culvert | 0.20 | 1.500 | 3.60 | 6.40 | RRM | VP | VP | VP | | | VP | 2.50 | 9.00 | | Yes | Proposed Replacement |
| 381 | 153.933 | Box culvert | 0.20 | 1.000 | 3.40 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 382 | 154.055 | Box culvert | 0.20 | 1.200 | 3.40 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 383 | 154.162 | Box culvert | 0.25 | 2.000 | 3.40 | 6.40 | RRM | VP | VP | VP | | | VP | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 384 | 154.274 | Box culvert | 0.20 | 1.000 | 3.20 | 6.00 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 385 | 154.350 | Box culvert | 0.20 | 1.000 | 3.20 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 386 | 154.530 | Box culvert | 0.25 | 2.000 | 3.40 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 387 | 154.703 | Box culvert | 0.20 | 1.300 | 3.50 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 388 | 154.900 | Box culvert | 0.20 | 1.000 | 3.50 | 6.40 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 389 | 154.984 | Box culvert | 0.20 | 1.000 | 3.40 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 390 | 155.178 | Box culvert | 0.20 | 0.900 | 3.40 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 391 | 155.305 | Box culvert | 0.20 | 1.200 | 3.30 | 5.90 | RRM | P | P | P | | | P | 2.50 | 4.30 | | Yes | Proposed Replacement |
| 392 | 155.575 | Box culvert | 0.20 | 1.000 | 3.30 | 5.80 | RRM | P | P | P | | | P | 2.50 | 1.50 | | Yes | Proposed Replacement |
| 393 | 155.705 | Box culvert | 0.20 | 1.000 | 3.90 | 6.10 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 394 | 155.637 | Box culvert | 0.20 | 0.900 | 3.30 | 5.80 | RRM | P | P | P | | | P | 1.50 | 5.20 | | Yes | Proposed Replacement |
| 395 | 155.865 | Box culvert | 0.20 | 1.000 | 3.40 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 396 | 156.015 | Box culvert | 0.20 | 1.000 | 3.30 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 397 | 156.090 | Box culvert | 0.20 | 1.000 | 3.40 | 6.20 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 398 | 156.163 | Box culvert | 0.20 | 1.500 | 3.40 | 5.90 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 399 | 156.240 | Box culvert | 0.20 | 1.000 | 3.40 | 6.00 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 400 | 156.370 | Box culvert | 0.20 | 1.200 | 3.30 | 6.30 | RRM | P | P | P | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 401 | 156.450 | Box culvert | 0.20 | 0.900 | 3.20 | 5.80 | RRM | P | P | P | | | VP | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 402 | 156.493 | Box culvert | 0.20 | 0.600 | 3.30 | 6.00 | RRM | P | P | P | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |
| 403 | 156.659 | Box culvert | 0.20 | 0.600 | 3.40 | 5.90 | RRM | P | P | P | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 404 | 156.733 | Box culvert | 0.20 | 1.000 | 3.60 | 6.70 | RRM | VP | P | P | | | VP | 1.50 | 3.20 | | Yes | Proposed Replacement |
| 405 | 156.938 | Box culvert | 0.35 | 4.000 | 3.40 | 6.10 | RRM | P | P | P | | | P | 10.00 | 15.00 | | Yes | Proposed Replacement |
| 406 | 157.000 | Box culvert | 0.20 | 1.100 | 3.40 | 6.00 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 407 | 157.056 | Box culvert | 0.20 | 1.000 | 3.40 | 5.70 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 408 | 157.117 | Box culvert | 0.20 | 0.600 | 3.40 | 5.60 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 409 | 157.180 | Box culvert | 0.20 | 0.600 | 3.40 | 5.90 | RRM | P | P | P | | | P | 1.50 | 3.50 | | Yes | Proposed Replacement |
| 410 | 157.233 | Box culvert | 0.35 | 4.000 | 3.60 | 6.60 | RRM | P | P | P | | | P | 3.00 | 7.00 | | Yes | Proposed Replacement |
| 411 | 157.290 | Box culvert | 0.20 | 1.000 | 3.40 | 5.70 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 412 | 157.349 | Box culvert | 0.30 | 2.900 | 3.40 | 6.20 | RRM | VP | P | P | | | P | 3.50 | 10.00 | | Yes | Proposed Replacement |
| 413 | 157.395 | Box culvert | 0.20 | 0.600 | 3.40 | 6.30 | RRM | | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 414 | 157.520 | Box culvert | 0.25 | 2.500 | 3.40 | 6.50 | RRM | VP | P | P | | | P | 2.50 | 7.00 | | Yes | Proposed Replacement |
| 415 | 157.645 | Box culvert | 0.20 | 0.600 | 3.50 | 6.80 | RRM | P | P | P | | | P | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 416 | 157.680 | Box culvert | 0.20 | 2X1.00 | 3.30 | 6.60 | RRM | VP | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 417 | 157.750 | Box culvert | 0.20 | 0.600 | 3.20 | 6.60 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 418 | 157.815 | Box culvert | 0.20 | 0.600 | 3.30 | 6.50 | RRM | P | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 419 | 157.945 | Box culvert | 0.20 | 1.000 | 3.50 | 6.40 | RRM | P | P | P | | | P | 1.50 | 8.00 | | Yes | Proposed Replacement |
| 420 | 158.024 | Box culvert | 0.20 | 1.000 | 3.30 | 6.20 | RRM | P | P | P | | | P | 1.50 | 2.00 | | Yes | Proposed Replacement |
| 421 | 158.162 | Box culvert | 0.20 | 1.000 | 3.40 | 8.60 | RRM | P | P | P | | | P | 4.00 | 15.00 | | Yes | Proposed Replacement |
| 422 | 158.240 | Box culvert | 0.20 | 1.000 | 3.30 | 5.90 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 423 | 158.314 | Box culvert | 0.20 | 1.000 | 3.20 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 9.00 | | Yes | Proposed Replacement |
| 424 | 158.437 | Box culvert | 0.20 | 1.000 | 3.30 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 3.00 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 425 | 158.515 | Box culvert | 0.20 | 0.600 | 3.40 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 426 | 158.611 | Box culvert | 0.20 | 1.500 | 3.40 | 6.90 | RRM | VP | VP | VP | | | VP | 6.00 | 15.00 | | Yes | Proposed Replacement |
| 427 | 158.700 | Box culvert | 0.20 | 1.000 | 3.60 | 6.10 | RRM | VP | VP | VP | | | VP | 1.50 | 6.00 | | Yes | Proposed Replacement |
| 428 | 158.770 | Box culvert | 0.20 | 0.900 | 3.50 | 6.20 | RRM | VP | VP | VP | | | VP | 1.50 | 6.20 | | Yes | Proposed Replacement |
| 429 | 158.840 | Box culvert | 0.20 | 1.000 | 3.70 | 6.40 | RRM | VP | VP | VP | | | VP | 1.50 | 5.80 | | Yes | Proposed Replacement |
| 430 | 158.975 | Box culvert | 0.20 | 1.000 | 3.30 | 6.60 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 431 | 159.210 | Box culvert | 0.20 | 0.700 | 3.50 | 6.70 | RRM | P | P | P | | | P | 1.50 | 2.20 | | Yes | Proposed Replacement |
| 432 | 159.285 | Box culvert | 0.20 | 0.600 | 3.50 | 6.30 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 433 | 159.470 | Box culvert | 0.20 | 0.700 | 3.40 | 6.40 | RRM | P | P | P | | | P | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 434 | 159.604 | Box culvert | 0.20 | 0.600 | 3.30 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 435 | 159.696 | Box culvert | 0.20 | 0.600 | 3.60 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 2.50 | | Yes | Proposed Replacement |
| 436 | 159.757 | Box culvert | 0.20 | 1.000 | 3.70 | 6.60 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 437 | 159.843 | Box culvert | 0.20 | 0.600 | 3.40 | 6.50 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 438 | 159.966 | Box culvert | 0.20 | 0.600 | 3.40 | 6.30 | RRM | VP | VP | VP | | | VP | 1.50 | 1.50 | | Yes | Proposed Replacement |
| 439 | 160.478 | Box culvert | 0.20 | 1.200 | 3.30 | 5.90 | RRM | P | P | P | | | P | 1.00 | 1.50 | | Yes | Proposed Replacement |
| 440 | 160.576 | Box culvert | 0.20 | 1.000 | 3.80 | 6.00 | RRM | P | P | P | | | P | 1.00 | 1.50 | | Yes | Proposed Replacement |
| 441 | 160.646 | Box culvert | 0.25 | 1.300 | 3.60 | 6.00 | RRM | P | P | P | | | P | 1.20 | 1.30 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | | Road No.:- |
| Section | | | | | | | | | | | | | | | | | Date of survey:- May ' 08 |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 442 | 160.725 | Box culvert | 0.20 | 1.000 | 3.60 | 6.00 | RRM | P | P | P | | | P | 1.00 | 1.00 | | Yes | Proposed Replacement |
| 443 | 160.896 | Box culvert | 0.20 | 1.000 | 3.60 | 5.50 | RRM | P | P | P | | | P | 1.00 | 1.00 | | Yes | Proposed Replacement |
| 444 | 161.120 | Box culvert | 0.20 | 1.300 | 3.40 | 5.80 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 445 | 161.240 | Box culvert | 0.20 | 1.300 | 3.50 | 5.70 | RRM | P | P | P | | | P | 1.00 | 1.30 | | Yes | Proposed Replacement |
| 446 | 161.635 | Box culvert | 0.20 | 0.900 | 3.50 | 5.70 | RRM | P | P | P | | | P | 1.20 | 1.30 | | Yes | Proposed Replacement |
| 447 | 161.837 | Hume pipe | 0.20 | 0.900 | 3.60 | 7.10 | RRM | P | P | P | | | P | 1.00 | 1.30 | | Yes | Proposed Replacement |
| 448 | 162.009 | Box culvert | 0.20 | 0.900 | 3.40 | 6.20 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 449 | 162.151 | Hume pipe | 0.20 | 0.900 | 4.20 | 6.90 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 450 | 162.464 | Box culvert | 0.20 | 1.000 | 4.00 | 10.20 | RRM | P | P | P | | | P | 1.10 | 1.30 | | Yes | Proposed Replacement |
| 451 | 162.487 | Hume pipe | 0.20 | 0.900 | 5.20 | 10.30 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 452 | 162.543 | Box culvert | 0.20 | 0.600 | 3.40 | 6.20 | RRM | VPV | VP | VP | | | VP | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 453 | 162.709 | Box culvert | 0.20 | 0.600 | 3.50 | 6.10 | RRM | VP | VP | VP | | | VP | 1.10 | 1.30 | | Yes | Proposed Replacement |
| 454 | 162.809 | Box culvert | 0.20 | 0.600 | 3.50 | 6.10 | RRM | P | P | P | | | P | 1.20 | 1.40 | | Yes | Proposed Replacement |
| 455 | 163.139 | Box culvert | 0.20 | 0.900 | 3.80 | 6.30 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 456 | 163.401 | Box culvert | 0.20 | 0.900 | 3.50 | 6.10 | RRM | P | P | P | | | P | 1.10 | 1.30 | | Yes | Proposed Replacement |
| 457 | 163.519 | Box culvert | 0.20 | 0.900 | 3.50 | 6.30 | RRM | VP | VP | VP | | | VP | 1.20 | 1.40 | | Yes | Proposed Replacement |
| 458 | 163.611 | Box culvert | 0.20 | 0.900 | 3.60 | 6.30 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 459 | 163.701 | Box culvert | 0.20 | 0.600 | 3.30 | 6.60 | RRM | VP | VP | VP | | | VP | 1.20 | 1.50 | | Yes | Proposed Replacement |
| 460 | 163.748 | Box culvert | 0.20 | 0.600 | 3.30 | 6.60 | RRM | VP | VP | VP | | | VP | 1.20 | 1.50 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | | Sheet No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | Road No.:- | | | |
| Section | | | | | | | | | | | | | | Date of survey:- May ' 08 | | | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 461 | 163.800 | Box culvert | 0.20 | 0.900 | 3.40 | 5.90 | RRM | P | P | P | | | P | 1.20 | 1.40 | | Yes | Proposed Replacement |
| 462 | 163.857 | Box culvert | 0.20 | 0.900 | 3.50 | 6.30 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 463 | 163.893 | Box culvert | 0.20 | 0.600 | 4.40 | 6.60 | RRM | P | P | P | | | P | 1.50 | 1.60 | | Yes | Proposed Replacement |
| 464 | 163.967 | Box culvert | 0.20 | 0.900 | 3.70 | 6.30 | RRM | P | P | P | | | P | 1.20 | 15.00 | | Yes | Proposed Replacement |
| 465 | 164.019 | Box culvert | 0.20 | 0.600 | 3.60 | 6.50 | RRM | P | P | P | | | P | 1.30 | 1.50 | | Yes | Proposed Replacement |
| 466 | 164.036 | Box culvert | 0.20 | 0.900 | 3.50 | 6.10 | RRM | G | P | P | | | P | 1.10 | 1.30 | | Yes | Proposed Replacement |
| 467 | 164.144 | Box culvert | 0.20 | 0.900 | 3.60 | 6.50 | RRM | P | P | P | | | P | 0.90 | 1.10 | | Yes | Proposed Replacement |
| 468 | 164.230 | Box culvert | 0.20 | 1.000 | 3.60 | 6.20 | RRM | G | P | P | | | P | 1.10 | 1.30 | | Yes | Proposed Replacement |
| 469 | 164.367 | Box culvert | 0.20 | 1.100 | 3.70 | 6.30 | RRM | P | P | P | | | P | 1.20 | 1.40 | | Yes | Proposed Replacement |
| 470 | 164.463 | Box culvert | 0.20 | 1.200 | 3.70 | 6.30 | RRM | G | P | P | | | P | 1.20 | 1.30 | | Yes | Proposed Replacement |
| 471 | 164.513 | Box culvert | 0.20 | 0.900 | 4.00 | 6.00 | RRM | P | P | P | | | P | 1.20 | 1.00 | | Yes | Proposed Replacement |
| 472 | 164.591 | Box culvert | 0.20 | 1.900 | 4.00 | 6.60 | RRM | P | P | P | | | P | 0.90 | 1.20 | | Yes | Proposed Replacement |
| 473 | 164.804 | Box culvert | 0.20 | 1.500 | 4.00 | 5.60 | RRM | P | P | P | | | P | 1.50 | 1.70 | | Yes | Proposed Replacement |
| 474 | 164.937 | Box culvert | 0.20 | 1.200 | 3.40 | 5.90 | RRM | P | P | P | | | P | 1.40 | 1.60 | | Yes | Proposed Replacement |
| 475 | 164.997 | Box culvert | 0.20 | 1.000 | 3.70 | 6.30 | RRM | P | P | P | | | P | 1.20 | 1.30 | | Yes | Proposed Replacement |
| 476 | 165.120 | Box culvert | 0.20 | 0.900 | 4.00 | 6.40 | RRM | P | P | P | | | P | 1.00 | 1.30 | | Yes | Proposed Replacement |
| 477 | 165.174 | Box culvert | 0.20 | 1.000 | 3.40 | 6.50 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 478 | 165.214 | Box culvert | 0.20 | 0.900 | 3.50 | 6.40 | RRM | P | P | P | | | P | 1.30 | 1.50 | | Yes | Proposed Replacement |
| 479 | 165.259 | Box culvert | 0.20 | 1.000 | 3.40 | 6.30 | RRM | P | P | P | | | P | 1.20 | 1.40 | | Yes | Proposed Replacement |
| 480 | 165.391 | Box culvert | 0.20 | 1.500 | 4.00 | 6.70 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |

| INVENTORY & CONDITION SURVEY FOR CULVERTS | | | | | | | | | | | | | | | | Sheet No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:- ZIRO DAPORIJO BRTF ROAD ( 98.00 KM TO 166.070 KM) | | | | | | | | | | | | | | | | Road No.:- | |
| Section | | | | | | | | | | | | | | | | Date of survey:- May ' 08 | |
| Sl. No | Location | Type of Structures( Pipe,slab,Box,Arch) | Thickness of Slab(m) | Span Arrangement and Total Ventway (No x Length)(m) | Carriageway Width (m) | Width of Culvert (m) | Details of Protection works | | Condition of various features of Culvert | | | | | Height above Bed level | | Presence of Scour | Adequecy of water way | Remarks |
| | | | | | | | Type | Condition | Slab/pipe/ box/Arch | Head wall | wing wall | Return wall | Parapet & Hand rail | U/S side (m) | D/S side (m) | | | |
| 481 | 165.437 | Box culvert | 0.20 | 0.600 | 3.60 | 6.70 | RRM | P | P | P | | | P | 1.20 | 1.40 | | Yes | Proposed Replacement |
| 482 | 165.528 | Box culvert | 0.20 | 0.600 | 3.50 | 6.50 | RRM | P | P | P | | | P | 1.00 | 1.20 | | Yes | Proposed Replacement |
| 483 | 165.664 | Box culvert | 0.30 | 3.000 | 3.80 | 9.90 | RRM | P | P | P | | | P | 0.60 | 0.90 | | Yes | Proposed Replacement |
| 484 | 165.707 | Box culvert | 0.25 | 1.800 | 3.60 | 7.00 | RRM | P | P | P | | | P | 3.20 | 3.50 | | Yes | Proposed Replacement |
| 485 | 165.859 | Box culvert | 0.25 | 1.800 | 3.60 | 7.00 | RRM | P | P | P | | | P | 3.20 | 3.50 | | Yes | Proposed Replacement |
| 486 | 165.887 | Box culvert | 0.20 | 1.100 | 3.50 | 6.50 | RRM | P | P | P | | | P | 0.90 | 1.10 | | Yes | Proposed Replacement |
| 487 | 165.912 | Box culvert | 0.25 | 2.400 | 4.30 | 7.60 | RRM | G | P | P | | | P | 1.70 | 1.90 | | Yes | Proposed Replacement |
| 488 | 165.970 | Box culvert | 0.20 | 1.000 | 3.70 | 6.20 | RRM | G | P | P | | | P | 0.90 | 1.20 | | Yes | Proposed Replacement |
| 489 | 166.005 | Box culvert | 0.20 | 1.300 | 3.90 | 6.30 | RRM | G | P | P | | | P | 1.10 | 1.50 | | Yes | Proposed Replacement |
| | | | | **558.630** | | | | | | | | | | | | | | |

Road Name:-ZIRO-DAPORIJO BRTF ROAD ( 98.000 KM TO 166.070 KM **(68.070 km )** ) Road No:-

Section :- Date of Survey:- May ' 08

| Sl.No. | Location (km) | Name of River and type of Crossing | Length of Bride/Span Arrangement (m) | Average vertical clearance | Type of Bridge | | | Year of constr-uction | Details of Superstructure | | | HFL(m) | Thickness of Girder/Slab (m) | Type of Protection work and condition | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Superstr ucture | Sub-structure | Foundatio n | | Features | Type | Condition (VG/G/F/P/VP ) | | | | |
| 1 | 109.720 | CHIKRU Nallah | 13.720 | 12.30 | RCC | C.R. Masonry | open foundation | 1975 | Deck | RCC | F | | 0.40 | | RCC T-Beam bridge |
| | | | | | | | | | Carriage way | RCC | F | | | | |
| | | | | | | | | | Foot way | Non Existing | - | | | | |
| | | | | | | | | | Railing | RCC | F | | | | |
| 2 | 118.890 | GAE Nallah | 15.240 | 6.80 | RCC | open foundation | | 1975 | Deck | RCC | F | | 0.40 | | RCC T-Beam bridge |
| | | | | | | | | | Carriage way | RCC | F | | | | |
| | | | | | | | | | Foot way | Non Existing | - | | | | |
| | | | | | | | | | Railing | RCC | VP | | | | |
| 3 | 121.230 | SIBE Nallah | 9.20 | 5.50 | RCC | C.R. Masonry | | 1975 | Deck | RCC | F | | 0.45 | | RCC T-Beam bridge |
| | | | | | | | | | Carriage way | RCC | F | | | | |
| | | | | | | | | | Foot way | Non Existing | - | | | | |
| | | | | | | | | | Railing | RCC | F | | | | |
| 4 | 138.250 | MATE Nallah | 10.060 | 6.50 | MSS | C.R. Masonry | | 1975 | Deck | RCC | P | | 0.40 | | MSS bridge |
| | | | | | | | | | Carriage way | RCC | P | | | | |
| | | | | | | | | | Foot way | Non Existing | NE | | | | |
| | | | | | | | | | Railing | RCC | VP | | | | |

Road Name:-ZIRO-DAPORIJO BRTF ROAD ( 98.000 KM TO 166.070 KM **(68.070 km )** )

Road No:-

Section :-

Date of Survey:- May ' 08

| Sl.No. | Location (km) | Name of River and type of Crossing | Length of Bride/Span Arrangement (m) | Average vertical clearance | Type of Bridge | | | Year of constr-uction | Details of Superstructure | | | HFL(m) | Thickness of Girder/Slab (m) | Type of Protection work and condition | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Superstr ucture | Sub-structure | Foundatio n | | Features | Type | Condition (VG/G/F/P/VP ) | | | | |
| 5 | 160.010 | SIGIN River | 48.770 | 9.20 | BB | C.R. Masonry | | 1998 | Deck | STEEL | VP | | 0.45 CUM | | 140' DSRP + 20' SSBB |
| | | | | | | | | | Carriage way | STEEL | VP | | | | |
| | | | | | | | | | Foot way | Non Existing | - | | | | |
| | | | | | | | | | Railing | STEEL | VP | | | | |
| 6 | 162.900 | SIYIN RIVER | 10.98 | 7.70 | RCC | CRM | | 1978 | Deck | RCC | P | | 0.40 | | MSS |
| | | | | | | | | | Carriage way | RCC | P | | | | |
| | | | | | | | | | Foot way | | | | | | |
| | | | | | | | | | Railing | RCC | VP | | | | |
| 7 | 166.070 | SUBANSIRI RIVER | 131.10 | 17.50 | BB | PC | RRM/CC | 1964 | Deck | STEEL | P | | 0.40 RRM | | Bailey bridge |
| | | | 239.07 | | | | | | Carriage way | STEEL | P | | | | |
| | | | | | | | | | Foot way | | | | | | |
| | | | | | | | | | Railing | STEEL | P | | | | |

**ROAD INVENTORY DATA SHEET**

Sheet No:

Road Name:- ZIRO - DAPORIJO BRTF ROAD

Road No:-

Section FROM::98.00 KM TO :166.07 KM

Road classification:-

Date of survey:- May' 08

| From (km) | To (km) | Terrain (Plain/Rolling/Hilly) | Land Use (Built Up/Agri/Forest/Industrial/Barren | Name of village/town | Formation width (m) | CARRIAGEWAY | | | SHOULDER+ | | | Embakement height (m) | Submergence (cm) | Details of Cross Roads | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Type * (BT/CC/GR/ER) | Width (m) | Condition** (G/F/P/VP) | Type* (BT/CC/GR/ER | Width (m) | Condition** (G/F/P/VP) | | | Location (km) | Road No (km) | Carriageway width (m) | |
| 98.000 | 99.000 | Hilly | Forest | Godak | 6.90 | BT | 3.60 | P | ER | | VP | | | | | | |
| 99.000 | 100.000 | Hilly | Forest | Bopi | 6.60 | BT | 3.70 | P | ER | | VP | | | | | | |
| 100.000 | 101.000 | Hilly | Forest | Bopi | 7.00 | BT | 3.80 | P | ER | | VP | | | | | | |
| 101.000 | 102.000 | Hilly | Forest | Bopi | 6.80 | BT | 3.40 | P | ER | | VP | | | | | | |
| 102.000 | 103.000 | Hilly | Forest | Bopi | 6.40 | BT | 3.30 | P | ER | | VP | | | | | | |
| 103.000 | 104.000 | Hilly | Forest | Bopi | 6.60 | BT | 3.50 | P | ER | | VP | | | | | | |
| 104.000 | 105.000 | Hilly | Forest | Bopi | 6.50 | BT | 3.70 | VP | ER | | VP | | | | | | |
| 105.000 | 106.000 | Hilly | Forest | Laa | 6.10 | BT | 3.50 | P | ER | | VP | | | | | | |
| 106.000 | 107.000 | Hilly | Forest | Laa | 6.20 | BT | 3.70 | P | ER | | VP | | | | | | |
| 107.000 | 108.000 | Hilly | Forest | Laa | 6.00 | BT | 3.40 | P | ER | | VP | | | | | | |
| 108.000 | 109.000 | Hilly | Forest | Laa | 6.50 | BT | 3.50 | P | ER | | VP | | | | | | |
| 109.000 | 110.000 | Hilly | Forest | Laa | 6.60 | BT | 3.60 | P | ER | | VP | | | | | | |
| 110.000 | 111.000 | Hilly | Forest | Laa | 7.00 | BT | 3.50 | VP | ER | | VP | | | | | | |
| 111.000 | 112.000 | Hilly | Built up | Laa | 6.80 | BT | 3.80 | VP | ER | | VP | | | | | | |
| 112.000 | 113.000 | Hilly | Forest | Puchigeko | 7.10 | BT | 3.60 | VP | ER | | VP | | | | | | |
| 113.000 | 114.000 | Hilly | Forest | Puchigeko | 7.20 | BT | 3.50 | VP | ER | | VP | | | | | | |
| 114.000 | 115.000 | Hilly | Built up | Puchigeko | 6.80 | BT | 3.80 | VP | ER | | VP | | | | | | |
| 115.000 | 116.000 | Hilly | Forest | Gami | 6.70 | BT | 3.30 | P | ER | | VP | | | | | | |
| 116.000 | 117.000 | Hilly | Forest | Gami | 6.80 | BT | 3.40 | P | ER | | VP | | | | | | |

**ROAD INVENTORY DATA SHEET**

Sheet No:

Road Name:- ZIRO - DAPORIJO BRTF ROAD

Road No:-

Section FROM::98.00 KM TO :166.07 KM

Road classification:-

Date of survey:- May' 08

| From (km) | To (km) | Terrain (Plain/Rolling/Hilly) | Land Use (Built Up/Agri/Forest/Industrial/Barren | Name of village/town | Formation width (m) | CARRIAGEWAY | | | SHOULDER+ | | | Embakement height (m) | Submergence (cm) | Details of Cross Roads | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Type * (BT/CC/GR/ER) | Width (m) | Condition** (G/F/P/VP) | Type* (BT/CC/GR/ER | Width (m) | Condition** (G/F/P/VP) | | | Location (km) | Road No (km) | Carriageway width (m) | |
| 117.000 | 118.000 | Hilly | Built up | Gami | 7.00 | BT | 3.20 | VP | ER | | VP | | | | | | |
| 118.000 | 119.000 | Hilly | Forest | Belak Muri | 7.20 | BT | 3.90 | P | ER | | VP | | | | 0.1 | 0.1 | 0.1 |
| 119.000 | 120.000 | Hilly | Forest | Belak Muri | 7.10 | BT | 3.90 | P | ER | | VP | | | | 0.2 | 0.2 | 0.2 |
| 120.000 | 121.000 | Hilly | Built up | Belak Muri | 7.30 | BT | 3.70 | VP | ER | | VP | | | | 0.3 | 0.3 | 0.3 |
| 121.000 | 122.000 | Hilly | Forest | Muri | 6.70 | BT | 3.60 | P | ER | | VP | | | | 0.4 | 0.4 | 0.4 |
| 122.000 | 123.000 | Hilly | Forest | Muri | 6.60 | BT | 3.30 | P | ER | | VP | | | | 0.5 | 0.5 | 0.5 |
| 123.000 | 124.000 | Hilly | Forest | Muri | 6.70 | BT | 3.40 | P | ER | | VP | | | | 0.6 | 0.6 | 0.6 |
| 124.000 | 125.000 | Hilly | Forest | Muri | 6.80 | BT | 3.60 | P | ER | | VP | | | | 0.7 | 0.7 | 0.7 |
| 125.000 | 126.000 | Hilly | Forest | Muri | 7.20 | BT | 3.90 | P | ER | | VP | | | | 0.8 | 0.8 | 0.8 |
| 126.000 | 127.000 | Hilly | Forest | Muri | 6.90 | BT | 3.40 | VP | ER | | VP | | | | 0.9 | 0.9 | 0.9 |
| 127.000 | 128.000 | Hilly | Built up | Muri | 7.10 | BT | 3.50 | VP | ER | | VP | | | | 1 | 1 | 1 |
| 128.000 | 129.000 | Hilly | Built up | Mugli | 7.00 | BT | 3.80 | VP | ER | | VP | | | | 1.1 | 1.1 | 1.1 |
| 129.000 | 130.000 | Hilly | Forest | Babla | 7.00 | BT | 3.70 | P | ER | | VP | | | | 1.2 | 1.2 | 1.2 |
| 130.000 | 131.000 | Hilly | Forest | Babla | 7.50 | BT | 3,9 | P | ER | | VP | | | | 1.3 | 1.3 | 1.3 |
| 131.000 | 132.000 | Hilly | Forest | Babla | 6.80 | BT | 4.00 | P | ER | | VP | | | | 1.4 | 1.4 | 1.4 |
| 132.000 | 133.000 | Hilly | Forest | Babla | 6.50 | BT | 3.90 | P | ER | | VP | | | | 1.5 | 1.5 | 1.5 |
| 133.000 | 134.000 | Hilly | Forest | Babla | 6.80 | BT | 3.80 | P | ER | | VP | | | | 1.6 | 1.6 | 1.6 |
| 134.000 | 135.000 | Hilly | Forest | Babla | 7.00 | BT | 3.60 | P | ER | | VP | | | | | | |
| 135.000 | 136.000 | Hilly | Forest | Babla | 6.90 | BT | 4.00 | P | ER | | VP | | | | | | |

**ROAD INVENTORY DATA SHEET**

Sheet No:

Road Name:- ZIRO - DAPORIJO BRTF ROAD

Road No:-

Section FROM::98.00 KM TO :166.07 KM

Road classification:-

Date of survey:- May' 08

| From (km) | To (km) | Terrain (Plain/Rolling/Hilly) | Land Use (Built Up/Agri/Forest/Industrial/Barren | Name of village/town | Formation width (m) | CARRIAGEWAY | | | SHOULDER+ | | | Embakement height (m) | Submergence (cm) | Details of Cross Roads | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Type * (BT/CC/GR/ER) | Width (m) | Condition** (G/F/P/VP) | Type* (BT/CC/GR/ER | Width (m) | Condition** (G/F/P/VP) | | | Location (km) | Road No (km) | Carriageway width (m) | |
| 136.000 | 137.000 | Hilly | Forest | Babla | 7.00 | BT | 3.80 | P | ER | | VP | | | | | | |
| 137.000 | 138.000 | Hilly | Built up | Babla | 6.20 | BT | 4.20 | VP | ER | | VP | | | | | | |
| 138.000 | 139.000 | Hilly | Forest | Baja | 7.10 | BT | 3.60 | P | ER | | VP | | | | | | |
| 139.000 | 140.000 | Hilly | Built up | Baja | 7.60 | BT | 3.90 | VP | ER | | VP | | | | | | |
| 140.000 | 141.000 | Hilly | Forest | Gigi | 6.00 | BT | 4.20 | P | ER | | VP | | | | | | |
| 141.000 | 142.000 | Hilly | Forest | Gigi | 6.50 | BT | 3.40 | P | ER | | VP | | | | | | |
| 142.000 | 143.000 | Hilly | Forest | Gigi | 6.70 | BT | 3.50 | P | ER | | VP | | | | | | |
| 143.000 | 144.000 | Hilly | Forest | Don | 6.30 | BT | 3.40 | P | ER | | VP | | | | | | |
| 144.000 | 145.000 | Hilly | Forest | Don | 7.00 | BT | 4.30 | P | ER | | VP | | | | | | |
| 145.000 | 146.000 | Hilly | Forest | Don | 7.10 | BT | 3.50 | P | ER | | VP | | | | | | |
| 146.000 | 147.000 | Hilly | Forest | Don | 6.50 | BT | 3.50 | P | ER | | VP | | | | | | |
| 147.000 | 148.000 | Hilly | Forest | Don | 6.40 | BT | 3.40 | P | ER | | VP | | | | | | |
| 148.000 | 149.000 | Hilly | Forest | Don | 6.50 | BT | 3.50 | P | ER | | VP | | | | | | |
| 149.000 | 150.000 | Hilly | Forest | Don | 6.80 | BT | 3.40 | P | ER | | VP | | | | | | |
| 150.000 | 151.000 | Hilly | Built up | Don | 6.60 | BT | 3.60 | VP | ER | | VP | | | | | | |
| 151.000 | 152.000 | Hilly | Forest | Daporijo | 6.90 | BT | 4.20 | P | ER | | VP | | | | | | |
| 152.000 | 153.000 | Hilly | Forest | Daporijo | 6.80 | BT | 3.80 | P | ER | | VP | | | | | | |
| 153.000 | 154.000 | Hilly | Forest | Daporijo | 6.70 | BT | 3.40 | P | ER | | VP | | | | | | |
| 154.000 | 155.000 | Hilly | Forest | Daporijo | 6.80 | BT | 3.50 | P | ER | | VP | | | | | | |

**ROAD INVENTORY DATA SHEET**

Sheet No:

Road Name:- ZIRO - DAPORIJO BRTF ROAD

Road No:-

Section FROM::98.00 KM TO :166.07 KM

Road classification:-

Date of survey:- May' 08

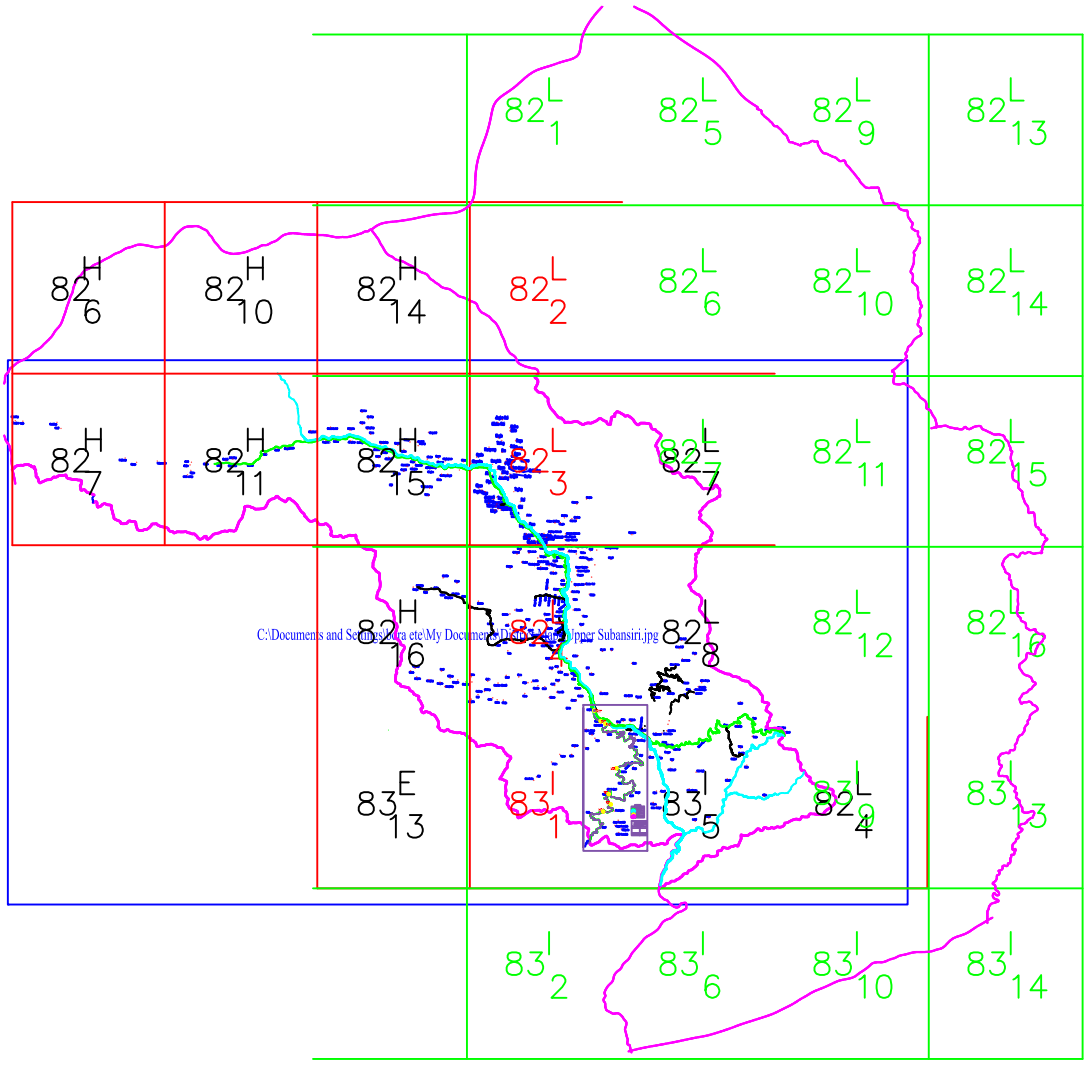
| From (km) | To (km) | Terrain (Plain/Rolling/Hilly) | Land Use (Built Up/Agri/Forest/Industrial/Barren | Name of village/town | Formation width (m) | CARRIAGEWAY | | | SHOULDER+ | | | Embakement height (m) | Submergence (cm) | Details of Cross Roads | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Type * (BT/CC/GR/ER) | Width (m) | Condition** (G/F/P/VP) | Type* (BT/CC/GR/ER | Width (m) | Condition** (G/F/P/VP) | | | Location (km) | Road No (km) | Carriageway width (m) | |
| 155.000 | 156.000 | Hilly | Forest | Daporijo | 6.50 | BT | 3.30 | P | ER | | VP | | | | | | |
| 156.000 | 157.000 | Hilly | Forest | Daporijo | 6.60 | BT | 3.40 | P | ER | | VP | | | | | | |
| 157.000 | 158.000 | Hilly | Built up | Daporijo | 7.00 | BT | 3.30 | P | ER | | VP | | | | | | |
| 158.000 | 159.000 | Hilly | Built up | Daporijo | 6.70 | BT | 3.40 | VP | ER | | VP | | | | | | |
| 159.000 | 160.000 | Hilly | Built up | Daporijo | 6.80 | BT | 3.30 | VP | ER | | VP | | | | | | |
| 160.000 | 161.000 | Hilly | Built up | Daporijo | 6.00 | BT | 4.90 | VP | ER | | VP | | | | | | |
| 161.000 | 162.000 | Hilly | Built up | Daporijo | 6.00 | BT | 3.20 | VP | ER | ` | VP | | | | | | |
| 162.000 | 163.000 | Hilly | Built up | Daporijo | 6.10 | BT | 3.60 | P | ER | | VP | | | | | | |
| 163.000 | 164.000 | Hilly | Built up | Daporijo | 6.10 | BT | 3.60 | P | ER | | VP | | | | | | |
| 164.000 | 165.000 | Hilly | Built up | Sikarijo | 6.10 | BT | 3.60 | P | ER | | VP | | | | | | |
| 165.000 | 166.000 | Hilly | Forest | Dolum | 6.10 | BT | 3.60 | P | ER | | VP | | | | | | |
| 166.000 | 166.070 | Hilly | Forest | Dolum | 6.10 | BT | 3.60 | P | ER | | VP | | | | | | |

| PAVEMENT CONDITION SURVEY | | | | | | | | | | | | | | | | Sheet No:- | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Road Name:-ZIRO - DAPORIJO BRTF ROAD | | | | | | | | | | | | | | | | Road No:- | |
| Section (FROM):-98.000 KM | | | | | To | 166.07 KM | | | | | | | | | | Date of Survey:- May ' 08 | |
| District (FROM):- LOWER SUBANSIRI | | | | | To | UPPER SUBANSIRI | | | | | | | | | | Weather:- Fair | |
| Chainage | | Pavement Composition | | | Shoulder | | Riding Quality | | Pavement Condition | | | | | Pavement Edge drop (mm) | Embankment Condition (Good/Fair/Poor) | Road side Drain (NE/PF/F) *** | Remarks |
| From (km) | To (km) | Composition | Type* | Thickness (mm) | Composition | Condition (Fair/Poor/ Falled) | Speed (km/hr) | Quality (G/F/P/VP) | Cracking (%) | Ravelling (%) | Patholing (No. and % 100m)** | Rut (None/Moderate/Severe) | Patching (No. and %100m)** | | | | |
| 98.000 | 166.070 | Surface | PC | 25 | Earthen | Poor | 30.00 | Poor | 3.00 | | 1/0.5 | None | | | | PF | |
| | | Binder | BM | | | | | | | | | | | | | | |
| | | Base | WBM | 75 to 150 | | | | | | | | | | | | | |
| | | Sub-base | WBM | 100 to 150 | | | | | | | | | | | | | |
| | | Subgrade | | | | | | | | | | | | | | | |
| | | Surface | | | | | | | | | | | | | | | |
| | | Binder | | | | | | | | | | | | | | | |
| | | Base | | | | | | | | | | | | | | | |
| | | Sub-base | | | | | | | | | | | | | | | |
| | | Subgrade | | | | | | | | | | | | | | | |

Note * BUSG= Built up Spray Grout; AC= Asphaltic Concrete; SDC= Semi Dense Concrete; PC= premix Carpet; MSS= Mix seal Surfacing
WBM= Water Bound Macadam; DBM= Dense Bituminous Macadam; BM= Bituminous Macadam; BS = Brick Soling; SS= Stone Solling

** No and %/100m = Total No of Potholing/Patching and % age area of Potholing/Patching 100m of length of road

# DRAWINGS

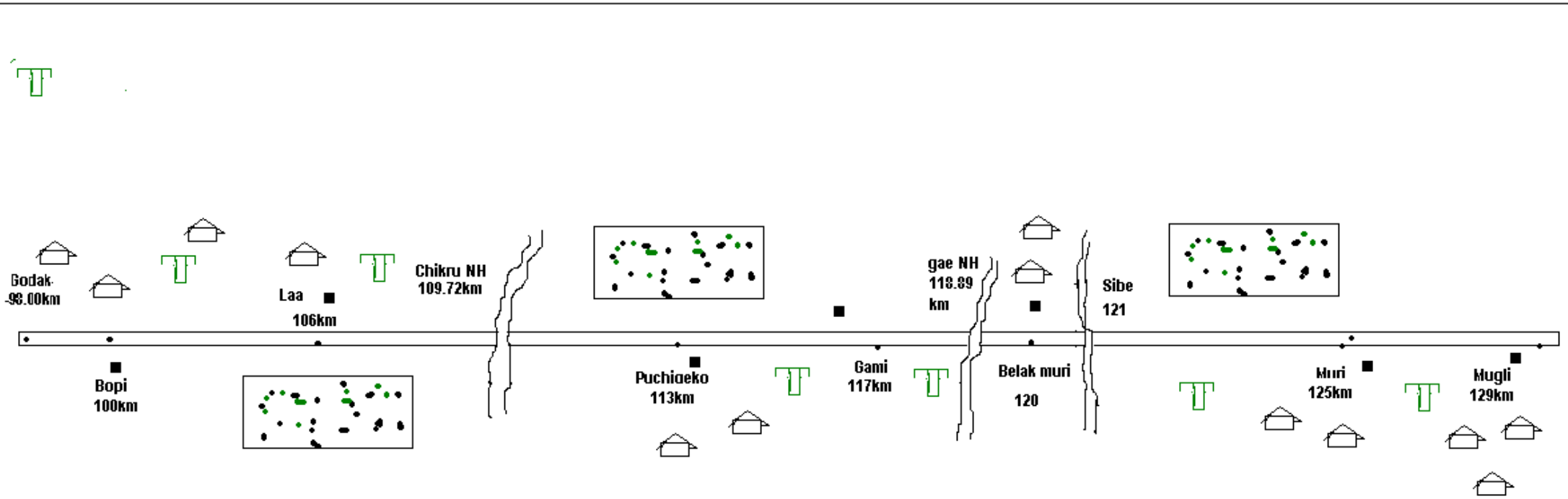


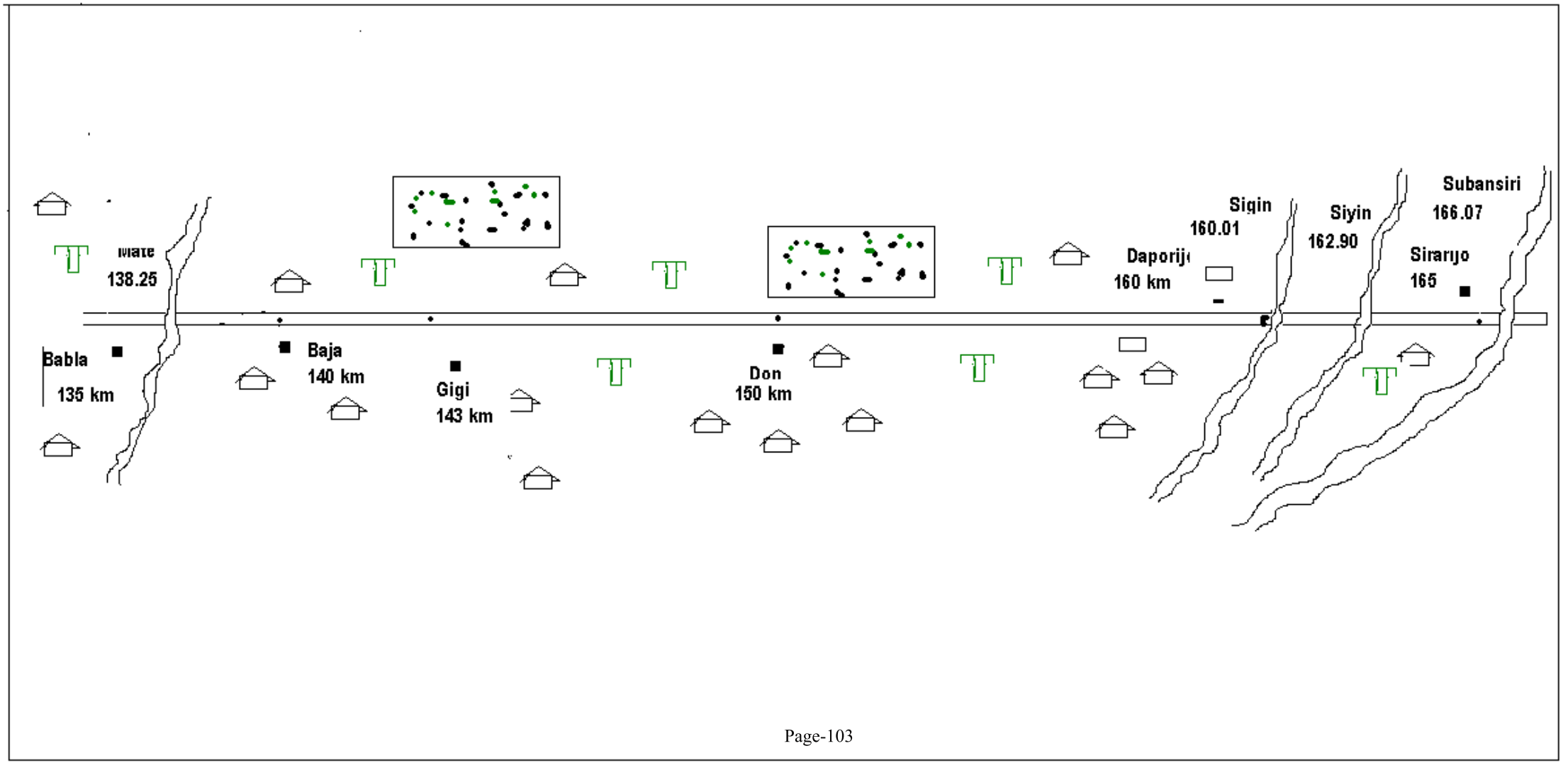

NAME OF WORK: PRE FEASIBILITY(PFR) ON TRANS ARUNACHAL HIGHWAY(TAHW) FROM GOBAK ON ZIRO DAPORIJO ROAD TO SUBANSIRI BRIDGE POINT OF DAPORIJO-BAME ROAD.

KEY PLAN

ASSISTANT SURVEYOR OF WORKS
DAPORIJO P.W.D. DIVISION
_____DAPORIJO

EXECUTIVE ENGINEER
DAPORIJO P.W.D. DIVISION
DAPORIJO


Godak
-98.00km
Laa
106km
Chikru NH
109.72km
Bopi
100km
Puchiaeko
113km
Gami
117km
gae NH
118.89
km
Belak muri
120
Sibe
121
Muri
125km
Mugli
129km


Mate
138.25
Babla
135 km
Baja
140 km
Gigi
143 km
Don
150 km
Daporij
160 km
Sigin
160.01
Siyin
162.90
Subansiri
166.07
Sirarjo
165