



HMIS News

Highway Management Information System, Planning Branch, DOR

HMIS News letter in Internet



The technology in the communication has made the world so narrow that all the countries of the world have been interconnected through Internet. So Planning Branch has also decided to make easy and prompt connection with all around the world by keeping the HMIS newsletter and other useful articles in the Internet. It has decided to upload its latest newsletter along with two preceding ones in the Internet. Now you can watch and download our newsletters from Internet in following web site:

<http://www.dorhmis.gov.np>

Review Mission of Asian Development Bank

A mission of Asian Development Bank visited Nepal from 1-11 December 1999 to review Loan No. 1377-NEP (SF): Third Road Improvement Project (TRIP) and TA No. 2969-NEP: Fourth Road Improvement Project (FRIP). During its visit the mission met representatives of Ministry of Finance, Ministry of Works and Transport and with road sector representatives from the World Bank and the Department for International Development (DFID). The mission has prepared the "Memorandum of Understanding", which was signed by Mr. Ananda Prasad Khanal, Director General of DoR and Robert Gordon Rinker, Mission Leader of ADB.

(Contd. on Page No.3)

MRCU

Norms for Recurrent Maintenance

Maintenance and Rehabilitation Co-ordination Unit prepared the draft norms for Cyclic Maintenance Operation.

To get the feedback, MRCU organized the discussion program on December 1999 on the MRCU hall. Director General of DoR, Ananda Prasad Khanal along with all DDGs and representatives of Divisional Road office and other engineers from department took part in the discussion

(Contd. on Page No. 5)

H.M.I.S

Node Up-dating

The node details of strategic road all over the country has been kept in dROAD of the HMIS Unit. These nodes had been classified around five years ago. So there has been lot of change in the node of different roads due to increase in the municipality areas and also due to progress of construction work in different on-going Highway and Feeder Roads.

Therefore Planning Branch, HMIS has awarded the Node updating contract to NEPECON to carry out the detail study of links. The scope of the study has been as follows:

- Prepare a list of detail road links covering every change in built up and no built up areas, intersection to the other roads having access to road leading to power production, tourism, religion and other important places.
- Point out in detail with figures the exact reference point of nodes and links that shall be easily identifiable by all concerned personal having on hand reference manual of the links and nodes.

It is expected that the report will come within the end of this fiscal year and updating of the new links in dROAD will be commenced.

Road Maintenance and Development Project

The RMDP Project, which is one of the biggest project funded by World Bank in our country's road sector mainly focuses on connecting 5 districts headquarters of Mid Western and Far Western Region periodic maintenance of selected section and rehabilitation of strategic network. RMDP had organized the Project Launch Workshop on Feb 24-25, 2000 in Himalaya Hotel. Secretary of Ministry of Works and Transport Mr. Hiranya Lal Regmi, DG of Dor Mr. Ananda Prasad Khanal and representatives of World Bank,

Ministry of Finance, National Planning Commission along with DDG of DoR was present in the workshop. During that workshop there was a presentation about the RMDP project. During the discussion, the involvement of the engineer in the execution phase of this project, which seems unexpectedly low, was also discussed. We have published the detail works of this project in our last issue. The total project is estimated as US\$ 65.9 million out of which 82.7% will be financed by International Development Agency (World Bank) and rest of by HMG/N. The duration of project is 5 years starting from February 2000.

The break down of the cost is as follows

❖ Policy Reforms	US\$ 0.4 m
❖ New Construction and Upgrading Roads	US\$ 45.8m
❖ Rehabilitation	US\$ 6.8 m
❖ Periodic Maintenance	US\$ 6.6m
❖ Institutional Strengthening	US\$ 4.8m
❖ Project Preparation Facility	US\$ 1.5m

The implementation arrangements of this project is as follows:

The Department of Roads is the implementing agency.

- Programme Coordinator is DDG, Foreign Cooperation Branch.
- Coordination is done by Project Coordination and Implementation Unit (PCU)
- One Project manager each for
 - Sanfebagar-Mangalsen and Sanfebagar-Martadi Road
 - Surkhet - Jumla Road
 - Baitadi - Darchula Road
 - Chinchu Jajarkot Road
- One Project Manager for Rehabilitation Component
- Regional Directors under the DDG Maintenance, responsible for the implementation of the periodic maintenance component in each Region through the Divisions.

Formation of Nepal Engineering Council

His Majesty's Government has formed the Nepal Engineering Council according to the Nepal Engineering Council Act 2055. Former Director General of DoR Mr. Ram Babu Sharma has been appointed as the Chairman of the Council. Similarly former Director General of DoR Mr. Niranjana Prasad Chalise has been appointed as Vice Chairman. Till now 16 members had been appointed in this council out of these 6 members has been appointed by the Nepal Engineering Association (NEA).

dTIMS Presentation

Dr. Nabin Kazi Pradhan has presented dTIMS in the Department of Road on Jan 11, 2000. Dr. Pradhan presented the detail of that software which is generally utilized for the planning of the maintenance of the road with the help of Surface Distress Index (SDI) and International Roughness Index (IRI) data. dTIMS software is developed by the Deighton Company, which has also developed dROAD6, which has been installed in HMIS Unit, Planning Branch. dROAD is a database software where as dTIMS is the software to plan the road maintenance with the dROAD data.

R.S.S.D.U

Road sector skill Development Unit has been involved in the development of the human resource of our department. For this purpose it has nominated different level of staffs of the department in different type of training and further courses. We have been publishing the detail of the courses and nominated staffs in our previous issues. Here is the continuation of the previous issues.

In our previous issues under the title training abroad in Operation Maintenance of Construction Machinery (04-Oct-01 Nov,1999) Pakistan, instead of SDE it should be Engr, Mr. Krishna Ram Thapa.

Training Abroad

1. **Software System Training (Dec 1999-Feb 2000), India**
Comp. Officer Mr. Binod Shrestha
2. **Follow up Seminar on Organisation & Management of Road Maintenance (28Feb-3 March), Thailand.**
DDG Mr. Keshav Pd. Pokharel
SDE Mr. Balkrishna Upadhyaya
SDE Mr. Krishana Bahadur Thapa

Training In Country

1. **DPTC General Training (3 Jan-4 Feb,2000), DPTC, Pulchowk, Lalitpur**
Mr. Bhimarjun Kadel, Overseer
Mr. Lakhan Bahadur Shahi, Overseer
2. **Diploma in Computer Technology (Jan 18-Aug 19, 2000)Lakhotea Computer Center, Putalisadak**
Mr. Murari Khanal, Comp Oper.
Mr. Ashok Bista Dat. Entry Oper.
Mr. Dhurba Bhattarai, Dat Entry Oper.
3. **Advanced Course on Management and Development (Jan 24- March 7, 2000) Nepal Administrative Staff College, Jawalakhel**
SDE. Mr. Min Raj Gyawali
SDE. Mr. Hare Krishana Bhagat
SDE. Mr. Prakash Jung Saha
SDE. Mr. Hariom Srivastav
4. **Professional Course on Management Development (Feb 2- March 16, 2000), Nepal Administrative Staff College, Jawalakhel**
Engr. Mr. Namo Nath Jha
Engr. Mr. Dayakanta Jha
5. **Proficiency in NetWare System Integration Course (Feb 16- May 16, 2000), College of Software Engineering**
Mrs. Januka Pokharel, Data Entry Operator

(Continued from Page No.1)

The "Memorandum of Understanding", contains the most important records of the missions observations and the agreements reached during meetings between the DoR and the Mission.

Third Road Improvement Project (TRIP):

TRIP, for approximately US\$ 35.1 million, was approved in September 1995, became effective in January 1996 and is presently scheduled to close on 30 June 2001. This project includes improvement of 250 km. of hill roads and rehabilitation of 100km. priority feeder roads.

The work progress till November 1999 has been roughly 80 percent. All Local Contractor Bidding Packages for the Sahajpur - Dadeldhura Road in Far Western Region have reached substantial completion and are in defects liability period.

The ICB Package No. 1, rehabilitation of 46.6 Km long Lamahi - Tulsipur road in the Mid Western Region was completed on 6 June 1999. It is also in the defects liability period. In this contract NRs 26 million was awarded by the Dispute Resolution Board (DRB) resulting from claims on this package. This has a negative impact resulting the increase of US\$2.02 million in the entire Project Budget. Therefore mission is in the opinion that all future Bank-financed Road-Improvement Projects in Nepal provide for International Arbitration instead of the DRB process.

All LCB contract packages except Package No.4 (NCCN) on the Ilam-Phidim Road in the Eastern Region will likely finish according to program.

Civil works on all six LCB packages of the Road Rehabilitation Component are for the most part, nearing completion. In some of the Packages local villager interference has delayed the completion of projects.

Fourth Road Improvement Project:

FRIP aims to prepare the investment project to promote economic growth in Nepal through the improvement of road transport. Though the draft final report has been submitted to and reviewed by the Bank, the original Terms of Reference for this do not properly address the present development strategy of ADB. As there is sufficient budget remain, FRIP has given variation order to modify ToR to include a more substantial poverty-impact study.

The list of proposed Road Projects is given in the following table. This includes all roads examined in the previous study with the exception of the Taplejung Road, which had an EIRR of less than 4 percent. The Bishnumati Link road has been also dropped due to budget constraints. The Bank has now programmed to finance up to 60 million, which will make up the total project cost of US\$80 million including 25 percent of HMG counterpart finance.

Gaighat - Diktel Road, Basantapur-Khandbari road and Hile-Bhojpur road have been previously included in FRIP but were dropped at DoR's request in anticipation that they could be constructed by DFID on a grant basis. But due to budgetary constraints, DFID will finance only Hile-Bhojpur Road within its Rural Access Program (RAP). Keeping in view of Bank's ultimate goal of poverty reduction, ADB requested DoR concurrence to review including the Basantapur Khandbari Road within FRIP, to which the DoR agreed.

Name of Road	EIRR (%)	Length (Km)	Allocated Budget (US\$Mil)
<u>New construction</u>			
Basantpur-Chainpur-Khandbari	22	89	7.97
<u>Improving/ Rehabilitation</u>			
Kathmandu Ring Road	71	26	5.61
Boudha Road	79	5	2.03
Damak - Gauriganj	25	22	1.84
Urlabari - Bardanga	24	28	2.69
Biratnagar-Rangeli-Dainiya-Bardanga	17	-	5.08
Dolaghat-Chautara	11	25	2.41
Panchkhal - Melanchi	12	23	2.64
Dandeldhura - Patan-Satbanj	13	55	11.68
Ilam Phidim (Final 16km)	7	24	3.45
<u>Periodic Maintenance</u>			
Belbari- Chauharwa	30	140	18.39

The total construction cost of FRIP has been estimated as US\$64.54 million with Consultancy Fees of US\$ 6 million and other costs amounting to total cost of about US\$ 80 million.

CALCULATED TRAFFIC DATA

Annual Average Daily Traffic of Strategic Roads

Planning Branch of DoR has been carrying out the manual traffic count since 1996. The first manual traffic count was carried out by Maintenance Rehabilitation Coordination Unit (MRCU) in 1994. At that time, the traffic count was carried out in only 14 stations. The traffic count stations have increased since then. Now in last year traffic count has been done in 75 stations along different links of strategic roads.

Due to budgetary constraints and other technical reasons, all the strategic roads has not covered by this traffic survey. But Planning branch is committed to expand its survey area in future. Generally, the traffic survey is done for three days. The traffic counted within these three days is averaged to calculate Average Daily Traffic. Previously these ADT has been kept in record for future reference. During the analysis, AADT is more essential than ADT, as the former one is generally used for different road planning works. So to calculate the AADT from ADT, MRCU has calculated the seasonality factors considering the daily traffic count obtained from automatic logger installed in 26 different parts of the strategic roads of the country. From these data, seasonality factor for particular road links has been calculated and for those links where there is no automatic logger, general value has been also calculated. As we have mentioned in our previous issue that MRCU has also made the database program to convert surveyed ADT into AADT using Microsoft Access. Now in HMIS unit the trend of keeping ADT has been altered and calculated AADT has been restored in DROAD5 from the year 1994.

The AADT of different road links, calculated from the three-day manual traffic count survey carried out in year 1999 compared with ADT is depicted in the following table.

ADT & AADT of road links of Strategic Road Networks (National Highways and Feeder roads)

Road Link	Station	ADT	AAADT
H0101	1 km east from Charali	1056	977
H0102	West from Charali (Near Buttabari)	1117	1032
H0705	1km north from Charali	623	587
F0101	Suoth from Birtamod (Near Chaitu Tample)	778	738
H0108	East from Itahari (Salakpur)	2072	2195
H0109	West from Itahari (At Pachurki)	2183	2181
H0111	East from Koshi Barrage (At Bokraha)	1191	1124
H0803	South from Itahari (At Ward no. 8)	1992	1970
H0804	North from Itahari (At Tarahara, Panipia)	1368	1446
H0901	North of Junction with MRM (At Kadmaha, Laxmipur-1)	384	388
F0201	200m south from Padajungi	335	400
F0501	200m south from junction with MRM Chauharwa	293	340
F0401	South from Rupani (At 5km)	453	454
F3901U	Outside of Muncipality (Near Singiya Khola)	496	487
F3801	West from Pasupatinagar (Near Barrier of VDC Pasupatinagar)	194	182
H0707	Chibitar (Fikal)	318	292
H0709	100m North border of Ilam Municipality	64	59
H0604	South from Dhalkebar (At Mahendranagar)	659	967
H0128	East from Pathlaiya (At Nijgadh)	1252	1129
H0129	North from Phatlaiya (At Amlekganj)	1820	1723
H0204	South from Pathlaiya (At Simra)	2049	1948
H0405	West from Munglin (At Dumre)	1198	1105
H0132U	West from Hetauda (At Nawalpur)	2029	1872
H0503	South from Munglin (At Kalikatar)	2633	2410
H0404	East from Munglin (At Kurintar)	2800	2552
H0214	Nagdhunga	2377	2167
H0120	East from Dhalkebar (At Pusholpur)	935	974
H0121	West from Dhalkebar (At Jamunibas)	858	931
F0701	1 Kilometer South from Chandranigapur	259	284
F0601	2 Kilometer south from Nawalpur (At Jutpani)	484	545
F1801U	Gandak Canal	560	569
H0205U	North from Hedauda (At Samari bridge)	83	74
F3401	End of Trisuli bridge	280	254
F2103U	End of Nagarjun forest (2 Km.north from Bypass)	749	688
F3001	Near junction of Zero mile	258	246
F3101	15 Km. east from Dolalgat	71	64
F3201	Lamosangu (End of Bridge)	243	221
H0304	Manohara Bridge	8341	7750
H0310U	Panchkhal (Near EMC)	763	724
F2201	Gate of TU	1489	1358
F2802	Near Army Camp	673	635
H0602	Jaleshor, Sahardbwa	310	385
H0146U	West from Butwal (At Okharpur)	1671	1537
H1004U	North from Butwal (At Chidiya Chauki)	789	738

H1002	South from Butwal (At Jogi Kuti)	2038	1949
H0144U	East from Butwal (At Sunwal)	2214	1993
F4402	West from Bhairahawa (At Dogahara)	196	262
F0901	South from Sunwal (At junction with MRM)	149	154
H0411	Talchowk, east from Pokhara	1456	1324
F1201	1 km South from Chanauta	551	538
F4203	North from Pokhara (Fedi)	748	706
H1012	South Pokhara (At Phusre)	526	490
F0801	1 Kilometer South from Bardaghat.	246	254
F4101	At Junction of Bindebasini	231	221
F3501	End of Marshayangdi river (At Majhuwa)	402	369
F4302	Near Batase Danda, Tanshen	219	198
H0133	West from Hetauda (At Lothar)	1655	1515
F1501	North from Lamahi near Arjun khola	172	109
H0157	East from Kohalpur (Near Arjun Khola)	714	763
H0158	West from Kohalpur (At Bhardaha)	372	385
H1205	North from Kohalpur (At Chisapani)	232	230
H1204	South from Kohalpur (At Ranjha)	580	603
F4602	West from Nepalganj (At Man Bridge)	215	274
F1601	South from Bhurigaon (At 1 Kilometer South)	73	99
H0163	East from Atariya (At Hanumanpur)	380	384
H0164	West from Atariya (At Gularia)	335	360
H1402	South from Atariya (At Boradangi)	527	510
H1403	15 km north from Godawari (At Khanidanda)	190	150
H1501	East from Syaule near Koryal	120	109
H1407	North from Syaule Near Anar Kholi)	144	131
H0806	North from Dharan(at Base Camp)	393	364
F0301	South from Bharada	280	318
H0115	West from Lahan	1318	1335
H0134	East from Narayannghat(Tikauli)	2643	2479
H0138	West from Narayannghat(Gaidakot)	1818	1760

H.M.I.S

Data Collection for NRS updating:

HMIS, Planning Branch has awarded the contract to NEPECON to carry out the data collection of the road data available in Division Road Office. As Planning Branch is trying to update the Nepal Road Statistics (NRS 1998) in the coming year, so it is essential to have the corrected up-dated data from the site. As NEPECON is also carrying out the node updating works of the strategic road, so during this survey focus will be fixed in updating data of other roads. Therefore during this study, a study team of NEPECON will visit to all of the Division Road Offices and other concerned road office to bring the data of the roads. So we want to request all the Division Offices to help the data collection team by providing the recent data. It is expected that the report will be submitted to HMIS at the end of this fiscal year.

(Continued from Page No.1)

The basic approach for the norms is as follows.

- ◆ Cyclic Maintenance Operation.
- ◆ Number of Cycle to be determined by Traffic and Road Condition of Roads.
- ◆ Norms Prepared for Each Cycle
- ◆ Norms is related to Road Inventory, Traffic and AADT.

- ◆ Cycle is recommended by a Matrix of AADT and SDI Rating.

The preparation of this norms aims to provide the tools to achieve the "**Planned Maintenance**" objective of the DoR Strategy in conjunction with the Routine Maintenance Norms. The items supposed to be included in this norm are as follows:

Black top Surface	Pot hole/Patch/Edge Repair	
	Crack Sealing	
Shoulder	Reshaping Levelling and Compacting of GR shoulder	
	Sealing of prime coat, SBST or BT macadam shoulder	
Access Road	Gravel Access Road Pot hole Repair	
	BT Access Road Pot hole Repair	
Culverts	Damaged Headwall/Wingwall/Catchpit/Abutment and Base minor Repair (Masonry Work)	
	Damaged Checkdam and Scour protection Work minor Repair (Masonry Work)	
Gabion Wall	Damaged Dry/Gabion/Masonry wall minor Repair (Masonry/Gabion Work)	
Masonry Wall		
Earthen Drain	Reshaping (Earth Work)	
Masonry Drain	Damaged Masonry work and Water proofing base work Repair (Masonry Work)	
Concrete Drain	Replace Concrete Cover	
Cause Way	---	
Embankment	Filling Rain Cuts and Turfing	
Bridge	Damaged Hand Rail Repair/Replace	
Road Sign	Repair/Replace/Paint damaged/stolen/faded road furniture	
Delineators		
Masonry Parapet		
Concrete Parapet		
Drum Parapet		
Guard rails		
Gabion crash barrier		
Km post		
CL/ Edge line painting		Paint worn out road marking

The norm has been calculated according to per cycle per kilometer recurrent maintenance works. The detail of the work and its percentage taken is given in the following table.

Per Cycle per kilometer Recurrent Maintenance work			
S.N.	Road Element	Recurrent work Description	Norms
1	Black top Surface	Pot hole/Patch/Edge Repair	0.50% of paved surface area
		Crack Sealing	0.30% of paved surface area
2	Shoulder	Reshaping Levelling and Compacting of GR shoulder	0.20% of GR shoulder area
		Sealing of prime coat, SBST or BT macadam shoulder	0.15% of Sealed shoulder area
3	Access Road	Gravel Access Road Pot hole Repair	0.40% of GR Access road area
		BT Access Road Pot hole Repair	0.30% of BT Access road area
4	Culverts	Damaged Headwall/Wingwall/Catchpit/Abutment and Base minor Repair (Masonry Work)	0.05 m ³ per culvert
		Damaged Checkdam and Scour protection Work minor Repair (Masonry Work)	
5.a	Gabion Wall	Damaged Dry/Gabion/Masonry wall minor Repair	0.15 m ² per 100m length
5.b	Masonry Wall	(Masonry/Gabion Work)	0.1 m ² per 100m length
6.a	Earthen Drain	Reshaping (Earth Work)	3 m ³ per 100m length

6.b	Masonry Drain	Damaged Masonry work and Water proofing base work Repair (Masonry Work)	1.5	m ² per 100m length
6.c	Concrete Drain	Replace Concrete Cover	0.25	m per 100m length
7	Cause Way	---		
8	Embankment	Filling Rain Cuts and Turfing	2%	of embankment area
9	Bridge	Damaged Hand Rail Repair/Replace		
10.a	Road Sign	Repair/Replace/Paint damaged/stolen/faded road furniture		
10.b	Deliniators			
10.c	Masonry Parapet			
10.d	Concrete Parapet			
10.e	Drum Parapet			
10.f	Guard rails			
10.g	Gabion crash barrier			
10.h	Km post			
10.l	CL/ Edge line painting		Paint wornout road marking	

Add 15% of the total cost of above items.

The number of cycles per year to carry out recurrent maintenance in any type of road will be governed by the traffic (vehicle per day) and by the Surface Index Indicator (SDI). The graphical representation of the recommended cycle per year is given as follows:

Recommended Cycle/Year			
Traffic (vpd) ↓	Surface →		
	Good 0 - 1.7 SDI	Fair 1.8 - 3.0 SDI	Poor 3.1 - 5 SDI
Low (<250)	1	2	Ad-hoc waiting Rehabilitation Reconstruction
Moderate (250 -	2	2	
High (>1500)	2	3	

As MRCU is in the process of making this norm, many delegates in the presentation program have given different suggestions, which will be incorporated during norms finalization. This type of norm for recurrent maintenance is a new concept so it needs rigorous workout to make practicable. MRCU also wants to inform all of the engineers who are expert in this field to send the comments and suggestion regarding this norm so that it will be helpful in making ideal norm for recurrent maintenance of the roads.

Geo Environment Unit

Geo Environment Unit of Planning Branch carries out geo/bio engineering investigation and environmental studies of different landslide prone areas of the roads. The study generally covers the investigation of geo -bioengineering and environmental studies of the stretch of road, which is vulnerable to the landslides.

The study conducted by this unit in the fiscal year 2055/56 is as follows:

1. Geological and Bioengineering Investigation of Baglung-Beni Road.
2. Geological & Bioengineering Investigation of Bhalunhang - Pyuthan Road
3. Initial Environmental Examination of Sunwal-Gothadi Road
4. Environmental Audit of TRP (Naubise-Bhainse Road)

5. Initial Environmental Examination of Bhedetar-Aahale Barachetra Road.
6. Environmental Audit of Butwal- Tansen Road.

Bio engineering Unit has started publishing the new books useful for the road- side stabilization. The books available in the unit are as follows:

1. Road side Bio-engineering site hand book
2. Road side Bio- engineering reference manual

These books will be distributed according as follows

- All DoR branches, Directorates, Divisions and Projects
- Any interested DoR engineers (Personal Copies)
- Any outside agencies (Government, NGO, and private companies) through official letter.

If you are interested please contact the Geo-Environmental Unit for a copy.

Planning Branch

FEASIBILITY STUDY:

Planning Branch of DoR has been doing feasibility study of roads from fiscal year 2054/55. Till now 137 roads projects and 82 bridges had been surveyed for its feasibility. In our last issue we published the data of the projects done in fiscal year 2054/55. According to final reports submitted by consultants, some of the data of the bridge projects done in fiscal year 2055/56 is depicted in the following table and the data of the road projects will be published in the coming issue.

Bridges:

S.No.	Name of the Projects	Name of District	Name of River	Found. Type	Span(M)	Estimated cost
1	Kathe Khola (Achetaa Ghat)	Baglung	Kathe Khola	Open	20.00	8,650,000.00
2	Riddi Hatiya Hasanapur Bridge	Banke	Jetha Nadi River	Well	41.00	22,607,400.00
3	Budhiya Nala Khola	Banke	Bhudhiya Nala	Well	40.00	22,607,400.00
4	Jamuni River Bridge Amad VDC	Bara	Jamuni Khola	Well	24.00	11,121,250.00
5	Sukalaiya Bridge	Bara	Shuklaiya River	Open	15.00	5,978,440.00
6	Githey Nala Bridge	Bardiya	Githey Nala	Well	28.00	6,921,500.00
7	Babai River Bridge (Confluence Point of Babai)	Bardiya	Babai River	Open	130.00	30,153,064.00
8	Chiptele Khola	Chitwan	Panpa River	Open	30.00	11,577,824.00
9	Parajuli Khola Bridge	Dailekh	Parajuli Khola	Open	45.00	18,583,250.00
10	Lalmatiya (Khumari) Bridge	Dang	Sano Nadi	Well	40.00	22,607,400.00
11	Tamghas VDC W.No. 1&4 connecting Bridge	Gulmi	Tamghas River	Open	8.00	866,125.00
12	Dhanawari Mai Bridge	Ilam	Danawari Mai Khola	Open	300.00	125,767,500.00
13	Ratuwa Bridge	Jhapa	Ratuwa Khola	Well	168.00	76,635,150.00
14	Hadiya Khola Bridge	Jhapa	Hadiya Khola	Well	120.00	55,815,750.00
15	Aruwa Khola(Chakchake 7 Khatakhatiya to Gochhap 2)	Jhapa	Aruwa Khola	Open	80.00	35,641,750.00
16	Tikapur- Bangla road Ranikulo Culvert Bridge	Kailali	Rani Kulo	Well	18.00	3,917,300.00
17	Thapapur-Bhajani (Kaada) Bridge	Kailali	Kanda River	Well	45.00	14,230,000.00
18	Jhashi (Banshi) Khola Bridge	Kanchanpur	Bhansi River	Well	80.00	17,784,000.00
19	Marthi River Bridge	Kapilvastu	Marthi River	Well	40.00	14,602,021.00
20	Purushottam River Bridge	Kapilvastu	Purushottami River	Well	20.00	118,818,000.00
21	Koilee River Causeway(Bangai Motipur)	Kapilvastu	Koeley River	Open	52.00	17,873,727.00
22	Koilee River Causeway	Kapilvastu	Baluhawa Khola	Well	20.00	118,818,000.00
23	Andheri Khola Bridge Bhadaure TamagiVDC	Kaski	Andheri River	Open	45.00	11,755,550.00
24	Bagmati (Shankhamul- Sundarighat Road) Bridge	Lalitpur	Bagmati River	Well	125.00	55,091,600.00
25	Marshyangdi Bridge	Lamjung	Marsayangadi River	Open	60.00	25,485,000.00
26	Pachain Bridge	Mohattari	Pachain River	Well	16.00	7,003,265.00
27	Dhanewa Bridge	Nawalparasi	Dhanewa River	Open	18.00	7,150,000.00
28	Narayani Ule Khola Bridge	Nawalparasi	Narayani Ulti Khola	Well	20.00	10,772,850.00
29	Dudh Koshi (Thakley VDC) Bridge	Okhaldhunga	Dudh Koshi River	Open	130.00	155,441,000.00
30	Puneet khola (Biruwiguthi VDC Bhadnihar)	Parsa	Phanti River	Well	45.00	14,016,579.00
31	Lalbakaiya Bridge	Rautahat	Lalbakaiya River	Well	120.00	64,597,785.00
32	Chandi River Bridge	Rautahat	Chandi River	Well	20.00	10,816,260.00
33	Telar Bridge(Bhagwanpur- Kalyanpur)	Rupandehi	Telar River	Well	27.00	14,529,375.00
34	Banjariya VDC Bridge	Rupandehi	Turiya River	Well	40.00	22,607,400.00
35	Kuriya Khola Bridge	Rupandehi	Kuriya River	Well	20.00	11,881,800.00
36	Indarawati River Bridge	Sindhupalchowk	Indrawati River	Open	144.00	43,735,673.00
37	Bheri River (Rakam) Bridge	Surkhet	Bheri River	Well	175.00	52,137,906.00
38	Jupra/ Vinggaun Bridge	Surkhet	Jhupra River	Well	75.00	29,061,450.00
39	Damauli- Bhadgaon Bridge	Tanahu	Budhi Khola	Open	36.00	115,415,000.00
40	Bhimad-Rishing Patan Bridge	Tanahu	Buldhi Khola	Open	17.00	7,675,000.00
41	Baruwa River Bridge	Udayapur	Baruwa River	Well	150.00	58,971,000.00
42	Kamala River Bridge	Udayapur	Kamala Khola	Open	170.00	40,333,640.00
43	Karuwa River Bridge	Udayapur	Karuwa River	Well	75.00	29,502,000.00

S.M.D**Road Maintenance Training****Introduction**

SMD Programme in its second phase has one general objective " to enhance management and implementation capacity and capability". In order to achieve this objective one of the key operational element of the programme is "to

prepared a comprehensive training course, which covers most activities of road maintenance like planning, designing and execution of all on road and off road maintenance.

The training programme was started on 6th March 2000 and completed on 17th March. The DDG/Maintenance Branch inaugurated the opening session on first day and DG/DOR distributed the certificates during the closing ceremony on last day. Thirteen overseers from different divisions participated in the training programme. The experiences

JEEPABLE SUSPENSION BRIDGE- A MODEL PROJECT

Planning Branch DoR is planning to carry out the feasibility and detail design of motorable suspension bridge. The design of this bridge will be carried out through NEPECON within this fiscal year. The construction of this bridge will be executed in the coming year as model pilot project.

train the staffs in all level". During the Pokhara YPO workshop in May 1998 it was agreed that different level Road Maintenance Training Programme will be designed and training will be conducted in a sustainable manner. A training management committee was constituted for identification of need based training programme, its designing and implementation. The committee is comprised of DDG Maintenance Branch, SMD Coordinator, RSSDU Manager, MRCU representative and CTA/SMD.SMD coordination unit under the guidance of training management committee started to formulate the training programme in consultation with RSSDU and TITI (Technical Instructors Training Institute, Sanothimi)

Pilot Training Programme

Since some of the training activities like length-workers training is already being conducted in the division level, now the next step is to start the overseer's training as a pilot scheme. In order to assess the training needs and identify the areas of training TITI conducted a three days DACUM (development of curriculum) job analysis workshop with eleven overseers from different divisions. Four DOR engineers were trained in TITI to design the course and to conduct the training. DACUM workshop has given a good basis for the development of the actual training programme. Through a series of meeting workshop and interaction with different stakeholders four DOR engineers (trainers)

gained by the trainers and feedback provided by the participants will be utilized in future regular training structured programmes.

Support for Training

All logistic, technical and financial support required for the training are being provided by SDC through the SMD Programme, Phase two.

*Do You Know*

- ❖ According to NRS 1998, the average influence area per km of road of the country is 11 Sq.km/ km.
- ❖ According to NRS 1998, the total road length of the country is 13223 km. out of which 4080 km is bituminous road, 3489 km is gravel road and 5654 is earthen road.
- ❖ Under Department of Roads, there are 25 Division Road Offices.

Note: In our previous issue we have published the lowest traffic count in the year 1999 was in Koshi Highway, but it should be in Mechi Highway (H07)

Address for correspondence:**The HMIS Unit**

Planning Branch Tel. : 262693, Ext.147 Fax. : 255746

Email: hmis@htp.com.np

Web site: <http://www.dorhmis.gov.np>

HMIS would like to thank to the colleagues Mr. Prakash Upadhyaya, Babu Ram Ranabhat, Shakil Manandhar, Bhupendra Bhatt and Bina of Planning Branch for compilation and production of this HMIS newsletter.

EDITORIAL

This newsletter is being produced for the dissemination of information of activities related to Highway Engineering and its development in the country and abroad. Highway Management Information System (HMIS) welcomes any article, news, events, suggestions related to Highway Engineering development.

Planning Branch**HMIS Unit**

Chief Advisor: Deepak Bahadur Thapa, DDG
Advisor: Sushila Dali

Editor1: Pramen P Shrestha, Engineer
Editor2: Ghana Shyam Gautam, Engineer