

#### 8-4 河川材料調査・河川横断測量結果

8 - 4 河川材料調査・河川横断測量結果

1) 河川材料調査

河川材料調査の結果を示す。

**GEOCE Consultants (P) Ltd.**  
**TEST PIT LOG OF GRID SAMPLING**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhuli Road Construction, Section III

Chainage: Ch. 31+100      Ground Elevation: 539.679 m      Test Pit No: 1      Date: March 2008  
 Location: Roshi Khola, Riverbed Surface      Coordinates: N 3036711.030 and E 383277.842      Aprox. Dimension of TP: 1.00 x 1.00 x 0.60 m      Logged By: KB

Classification Group Symbol	Graphic	Depth (m)	Type and Depth of Sample Taken	CLASSIFICATION AND DESCRIPTION OF MATERIAL (Typical name, colour, in wet condition, odour, if any degree of plasticity, grain size range and description, moisture conditions, degree of compactness and other pertinent information)	Dimension of 15th Gravel			
					Length L, cm	Breadth B, cm	Height H, cm	
GP		0.05		0 to 30 cm, Sandy GRAVEL, greyish, medium grained sand, micaceous, little non plastic fines, sub rounded and sub angular Boulder, hard and strong	4.5	3	2	3
		0.10						
		0.15						
		0.20						
		0.25						
GP		0.30		30 to 60 cm, Sandy GRAVEL, greyish, medium grained sand, micaceous, little non plastic fines, sub rounded and sub angular Boulder, hard and strong, maximum size of boulder fraction of 14 x 12 x 8 cm				
		0.35						
		0.40						
		0.45						
		0.50						
		0.55						
		0.60						

TP-1 地点の試掘結果とグリット法による粒径

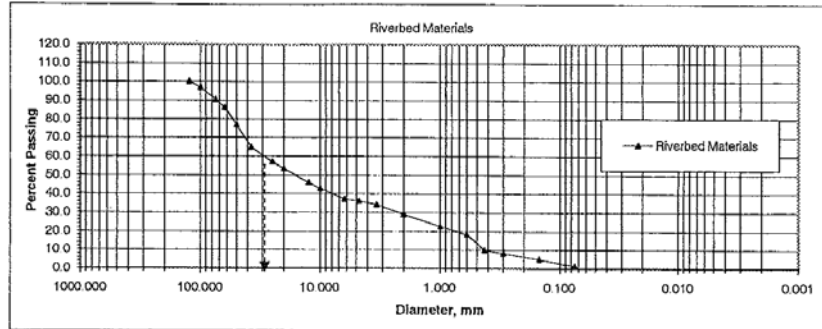
**GEOCE Consultants (P) Ltd.**  
**TEST RESULTS OF RIVERBED MATERIALS**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhull Road Construction, Section III

Test Pit No	TP - 1	Material Source	Foshi Khola	March 2008
Location	Ch 31+100	Sampling from	Riverbed Surface at Right Bank	KB

**LABORATORY TEST RESULTS**

**A. Particle Size Distribution**



Description	D 80 mm	Boulder (%)	Gravel (%)	Sand (%)			Silt & Clay (%)	Silt (%)	Clay (%)
				Coarse	Medium	Fine			
Riverbed Materials	30	10	54	7	18	9	1	-	-

**B. Other Test Results**

Description	Length H, cm	Breadth B, cm	Height H, cm	Mean siz, $x = \text{SQRT} (LxBxH)^{1/3}$
Dimension of 15th Gravel	4.50	3.00	2.00	3

**C. Photograph**



TP-1 地点の河床状況と平均粒径試験結果

**GEOCE Consultants (P) Ltd.**  
**TEST PIT LOG OF GRID SAMPLING**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhuif Road Construction, Section III

Chainage: Ch 30+600      Ground Elevation: 536.633 m      Test Pit No: 2      Date: March 2008  
 Location: Roshi Khola, Riverbed Surface      Coordinates: N 3036762.400 and E 383607.057      Aprox. Dimension of TP: 0.91 x 0.90 x 0.60 m      Logged By: KB

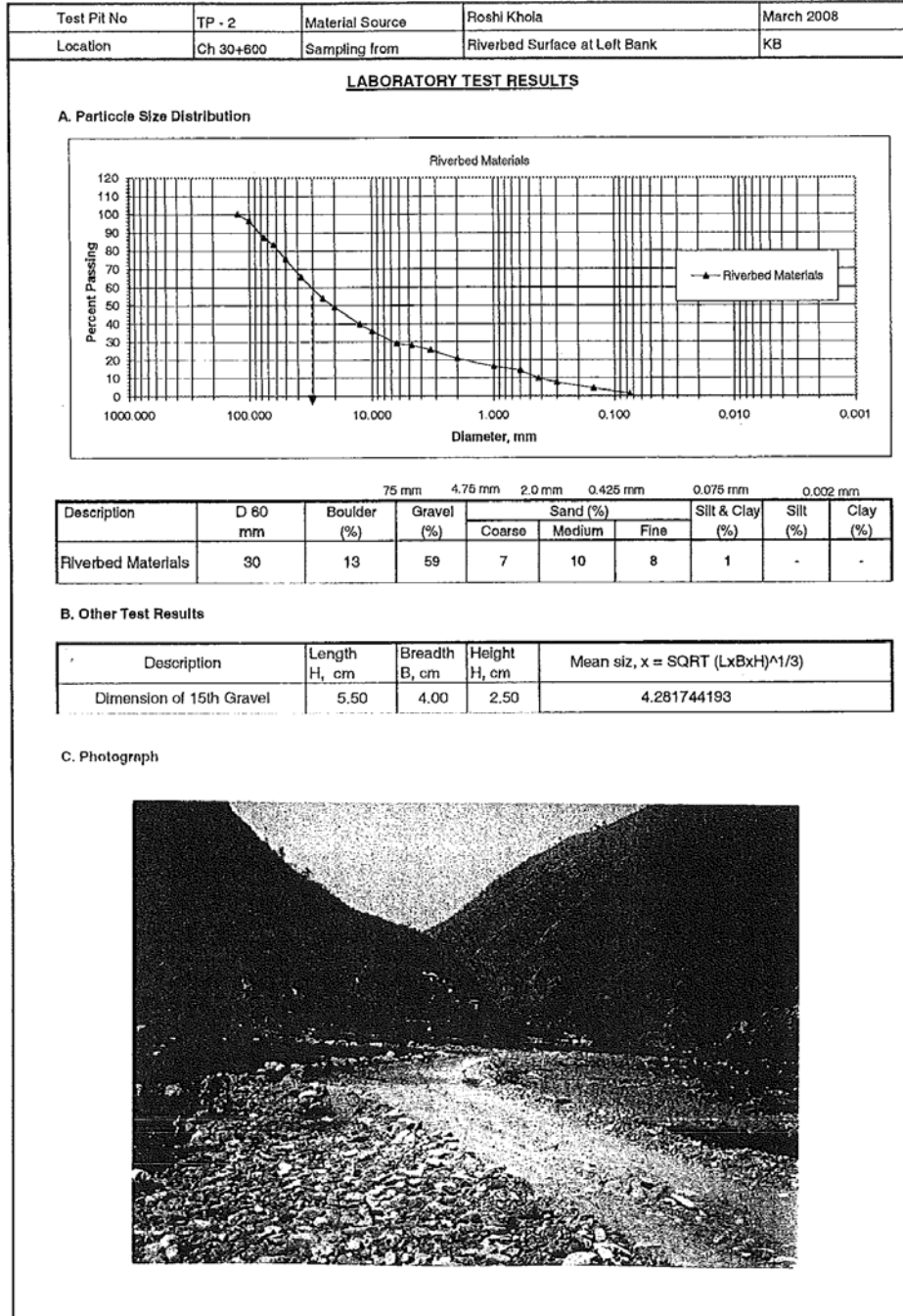
Classification Group Symbol	Graphic	Depth (m)	Type and Depth of Sample Taken	Dimension of 15th Gravel				
				Length L, cm	Breadth B, cm	Height H, cm		
GP		0.05		CLASSIFICATION AND DESCRIPTION OF MATERIAL (Typical name, colour, in wet condition, odour, if any degree of plasticity, grain size range and description, moisture conditions, degree of compactness and other pertinent information)	5.5	4	2.5	Mean size, X = SORT[(Lx8xH) <sup>1/3</sup> ]
		0.10						
		0.15						
		0.20						
		0.25						
		0.30						
		0.35						
		0.40						
		0.45						
		0.50						
GP		0.55	Bulk for GSA	30 to 60 cm, Sandy GRAVEL, greyish, medium grained sand, micaceous, little non plastic fines, sub rounded and sub angular Boulder, hard and strong, maximum size of boulder fraction of 17 x 14 x 4 cm				
		0.60						

TP-2 地点の試掘結果とグリット法による粒径

GEOCE Consultants (P) Ltd.

**TEST RESULTS OF RIVERBED MATERIALS**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhuli Road Construction, Section III



TP-2 地点の河床状況と平均粒径試験結果

**GEOCE Consultants (P) Ltd.**  
**TEST PIT LOG OF GRID SAMPLING**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhu Road Construction, Section III

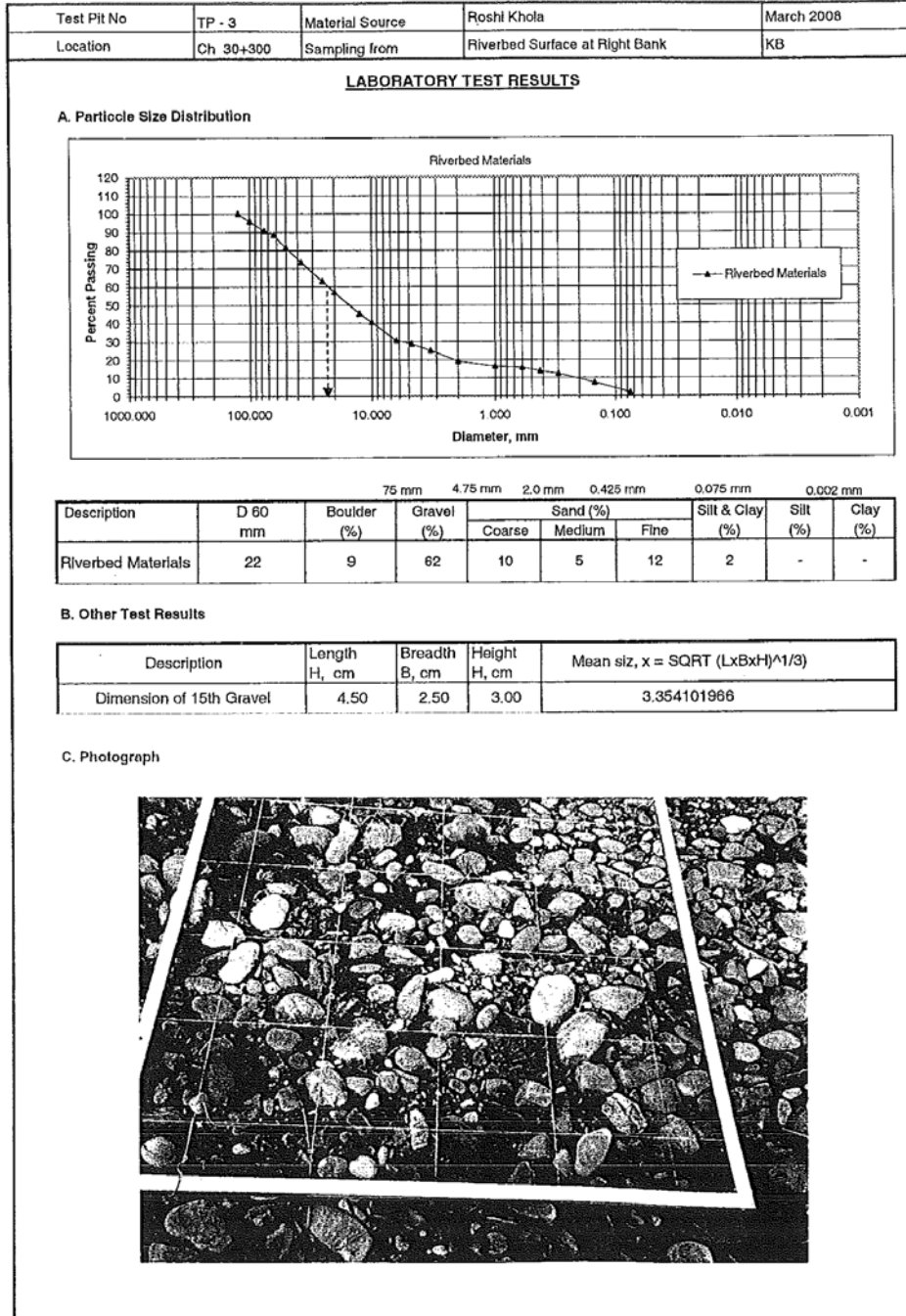
Chainage: Ch 30+300      Ground Elevation: 533.845 m      Test Pit No: 3      Date: March 2008  
 Location: Roshi Khola, Riverbed Surface      Coordinates: N 3036875.520 and E 393810.552      Aprox. Dimension of TP: 0.50 x 0.90 x 0.60 m      Logged By: KB

Classification Group Symbol	Graphic	Depth (m)	Type and Depth of Sample Taken	CLASSIFICATION AND DESCRIPTION OF MATERIAL (Typical name, colour, in wet condition, odour, if any degree of plasticity, grain size range and description, moisture conditions, degree of compactness and other pertinent information)				Dimension of 15th Gravel		
				Length L, cm	Breadth B, cm	Height H, cm	Mean size, x = SCRT(LXBH <sup>1/3</sup> )			
GP		0.05	0 to 30 cm, Sandy GRAVEL, greyish, fine grained sand, micaceous, sub rounded and sub angular Boulder, flaky gravel fraction, hard and strong	4.5	2.5	3	3.354101966			
		0.10								
		0.15								
		0.20								
		0.25								
		0.30								
GP		0.35	30 to 60 cm, Sandy GRAVEL, greyish, fine grained sand, micaceous, sub rounded and sub angular Boulder, flaky gravel fraction, hard and strong, maximum size of boulder fraction of 22 x 12 x 7 cm							
		0.40								
		0.45								
		0.50								
		0.55								
0.60										

TP-3 地点の試掘結果とグリット法による粒径

**GEOCE Consultants (P) Ltd.**  
**TEST RESULTS OF RIVERBED MATERIALS**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhuli Road Construction, Section III






TP-3 地点の河床状況と平均粒径試験結果

**GEOCE Consultants (P) Ltd.**  
**TEST PIT LOG OF GRID SAMPLING**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhuli Road Construction, Section III

Chainage: Ch 27+800      Ground Elevation: 519.560 m      Test Pit No: **4**      Date: **March 2008**  
 Location: **Sunkosi Nadi Flood Plain**      Coordinates: N 3035719.730 and E 384653.326      Aprox. Dimension of TP: 0.90 x 0.70 x 0.65 m      Logged By: **KB**

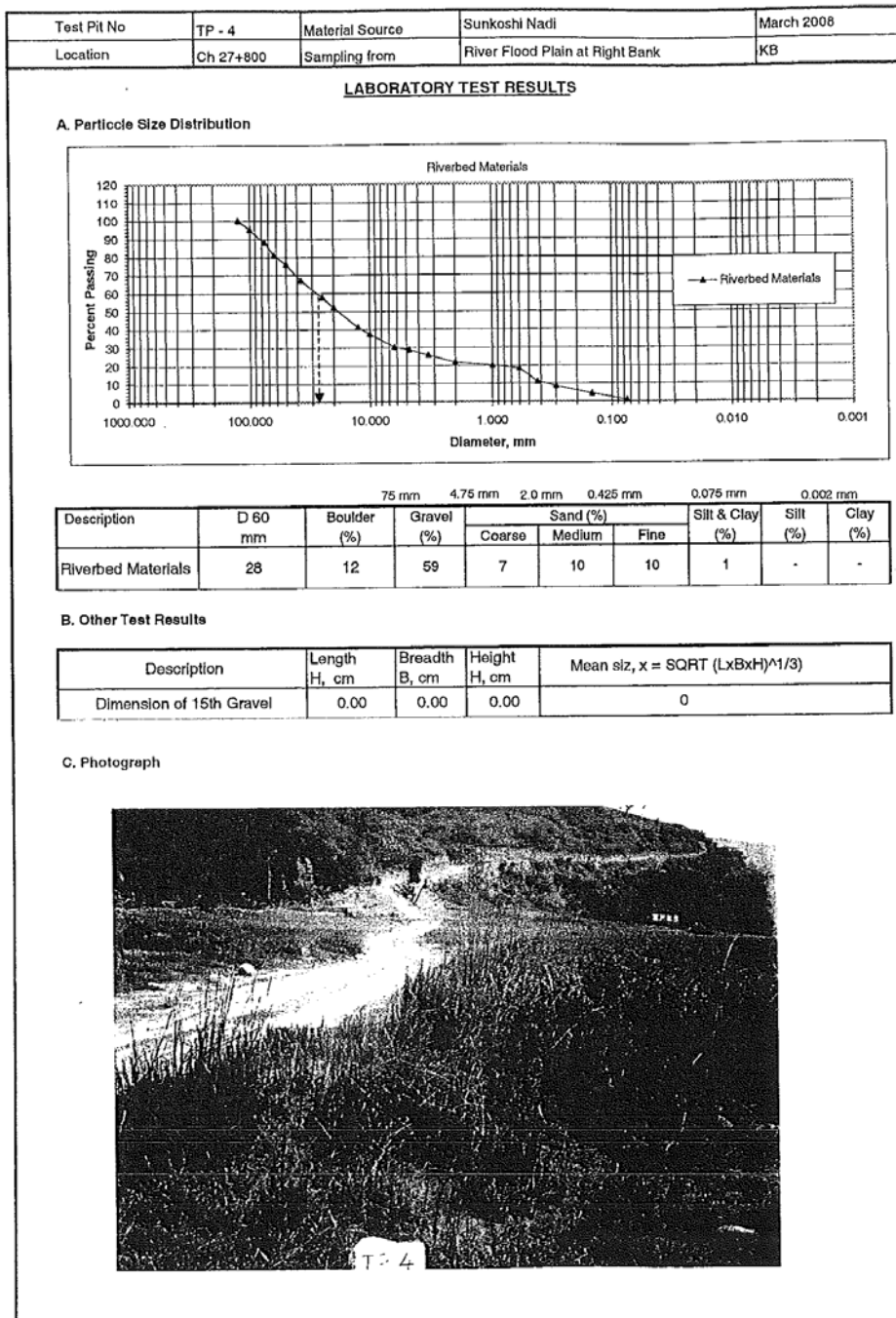
Classification Group Symbol	Graphic	Depth (m)	Type and Depth of Sample Taken	CLASSIFICATION AND DESCRIPTION OF MATERIAL <i>(Typical name, colour, in wet condition, odour, if any degree of plasticity, grain size range and description, moisture conditions, degree of compactness and other pertinent information)</i>	Dimension of 15th Gravel at Riverbed		
					Length L, cm	Breadth B, cm	Height H, cm
MS		0.05		0 to 25 cm, Silty SAND, greyish, fine grained sand, grass roots extended upto 10 cm from ground level	0	0	0
		0.10					
		0.15					
		0.20					
		0.25					
MS		0.30		25 to 50 cm, Silty SAND, greyish, fine grained sand, with occasional rounded boulder			
		0.35					
		0.40					
GP		0.45		50 to 60 cm, Sandy GRAVEL, greyish, fine grained sand, little micaceous mixed with little non plastic fines, sub rounded and sub angular, hard & strong maximum size of boulder fraction of 23 x 20 x 9 cm			
		0.50					
		0.55					
		0.60					

TP-4 地点の試掘結果とグリット法による粒径



**GEOCE Consultants (P) Ltd.**  
**TEST RESULTS OF RIVERBED MATERIALS**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhuli Road Construction, Section III



TP-4 地点の河床状況と平均粒径試験結果

**GEOCE Consultants (P) Ltd.**  
**TEST PIT LOG OF GRID SAMPLING**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhuli Road Construction, Section III

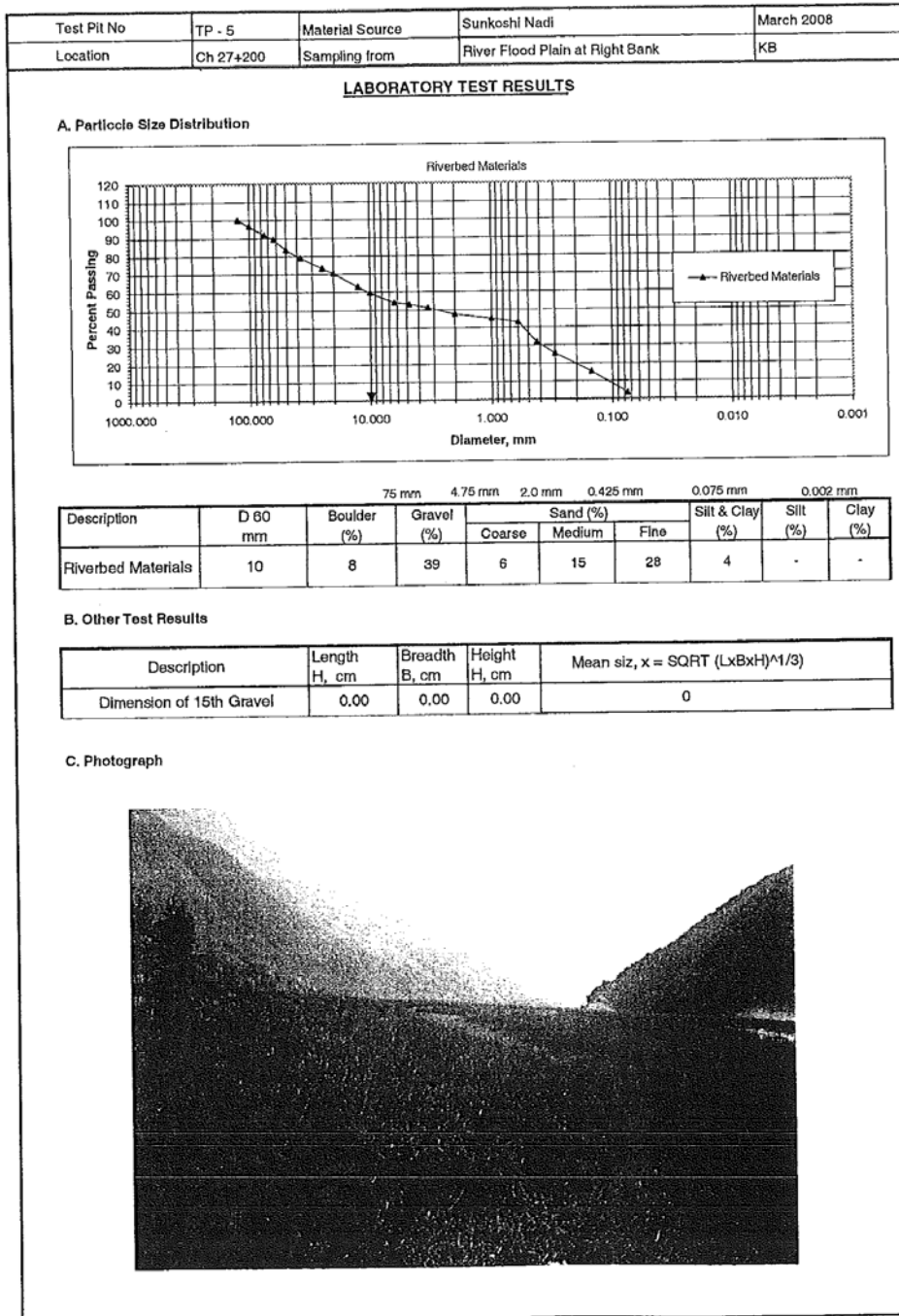
Chainage: Ch. 27+200      Ground Elevation: 517.552 m      Test Pit No: 5      Date: March 2008  
 Location: Sunikost Nadi Flood Plain      Coordinates: N 3035397.180 and E 384904.652      Approx. Dimension of TP: 0.90 x 0.80 x 0.60 m      Logged By: KB

Classification Group Symbol	Graphic	Depth (m)	Type and Depth of Sample Taken	CLASSIFICATION AND DESCRIPTION OF MATERIAL <i>(Typical name, colour, in wet condition, odour, if any degree of plasticity, grain size range and description, moisture conditions, degree of compactness and other pertinent information)</i>	Dimension of 15th Gravel at Riverbed		
					Length L, cm	Breadth B, cm	Height H, cm
MS		0.05		0 to 40 cm, Silty SAND, greyish, fine grained sand, grass roots extended upto 12 cm from ground level	0	0	0
		0.10					
		0.15					
		0.20					
		0.25					
		0.30					
		0.35					
SP		0.40	Bulk for GSA	40 to 60 cm, Gravelly SAND, greyish/brownish, fine grained sand, little micaceous, mixed with little non plastic fines, sub rounded and sub angular Boulder and falky gravel fractions, hard & strong maximum size of boulder fraction of 16 x 13 x 5 cm			
		0.45					
		0.50					
		0.55					
		0.60					

TP-5 地点の試掘結果とグリット法による粒径

**GEOCE Consultants (P) Ltd.**  
**TEST RESULTS OF RIVERBED MATERIALS**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhuli Road Construction, Section III



TP-5 地点の河床状況と平均粒径試験結果

**GEOCE Consultants (P) Ltd.**  
**TEST PIT LOG OF GRID SAMPLING**

Hydrological Study For Basic Design Study on The Project For Construction of Sindhuji Road Construction, Section III

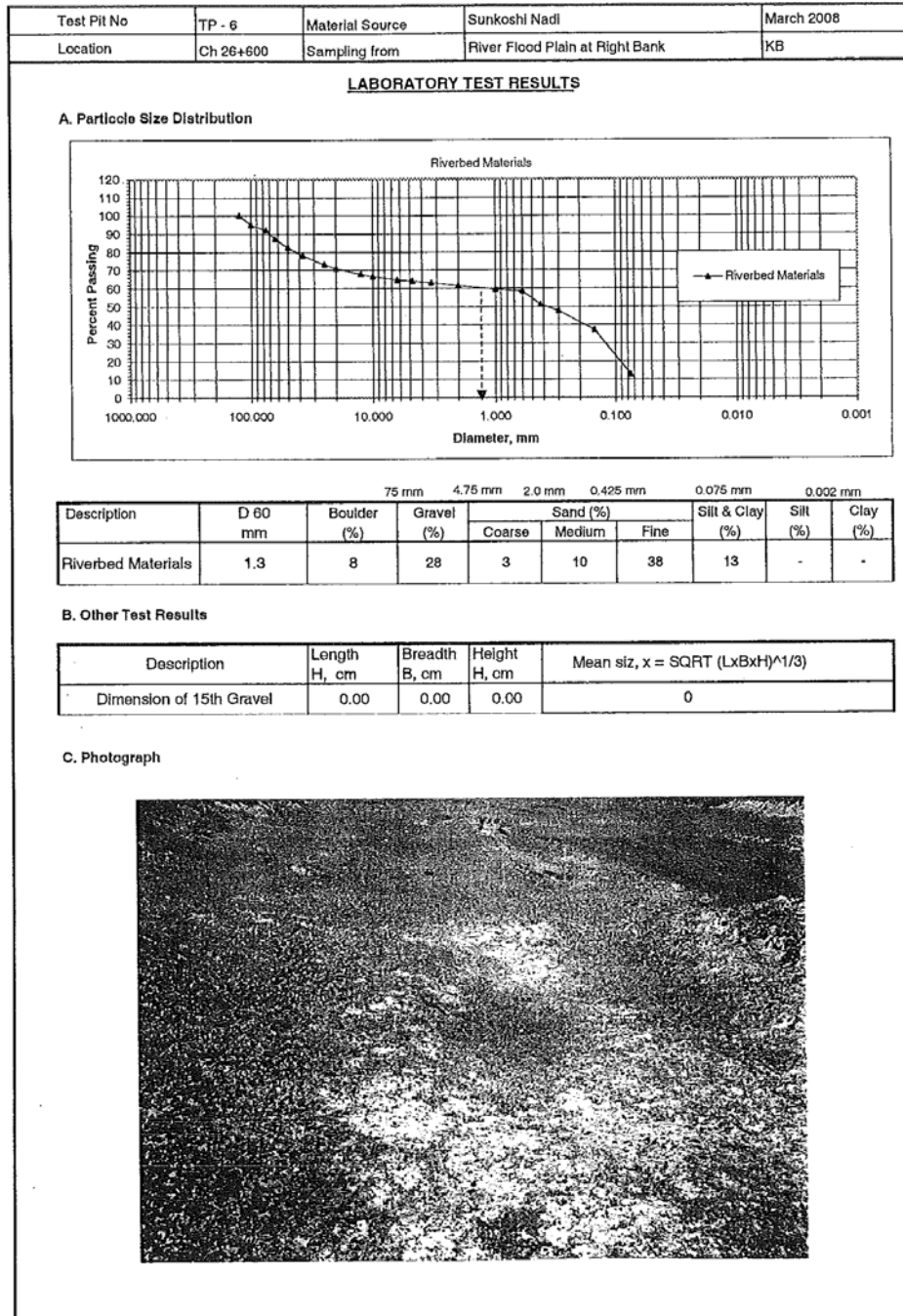
Chainage: Ch 26+600      Ground Elevation: 515.117 m      Test Pit No: 6      Date: March 2008  
 Location: Sunkosi Naaf Flood Plain      Coordinates: N 3035127.630 and E 395570.512      Approx. Dimension of TP: 0.90 x 0.90 x 0.90 m      Logged By: KB

Classification Group Symbol	Depth (m)	Type and Depth of Sample Taken	Dimension of 15th Gravel at Riverbed			Mean size, $x = \sqrt{\frac{L \times B \times H}{1/3}}$
			Length L, cm	Breadth B, cm	Height H, cm	
SM	0.05	CLASSIFICATION AND DESCRIPTION OF MATERIAL (Typical name, colour, in wet condition, odour, if any degree of plasticity, grain size range and description, moisture conditions, degree of compactness and other pertinent information)  0 to 40 cm, Silty SAND, greyish, fined grained sand, grass roots extended upto 10 cm from ground level	0	0	0	0
	0.10					
	0.15					
	0.20					
	0.25					
	0.30					
	0.35					
	0.40					
	0.45					
	0.50					
SP	0.55	40 to 60 cm, Gravelly SAND, greyish/brownish, fine grained sand, little micaceous, mixed with little slightly plastic fines, sub rounded and sub angular Boulder and falky gravel fractions, hard & strong, maximum size of boulder fraction of 18 x 12 x 4 cm				
	0.50					
	0.45					
	0.40					

TP-6 地点の試掘結果とグリット法による粒径

**GEOCE Consultants (P) Ltd.**  
**TEST RESULTS OF RIVERBED MATERIALS**

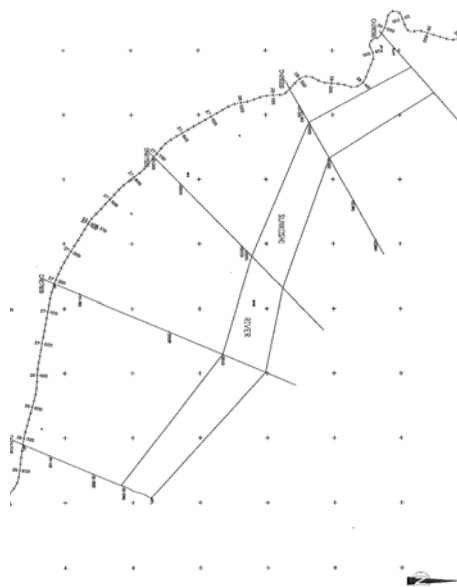
Hydrological Study For Basic Design Study on The Project For Construction of Sindhuli Road Construction, Section III



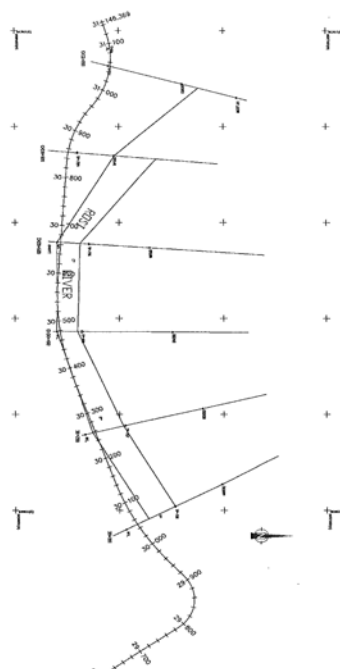
TP-6 地点の河床状況と平均粒径試験結果

1) 河川横断測量結果

河川横断測量の横断箇所及び方向と実測図を示す。

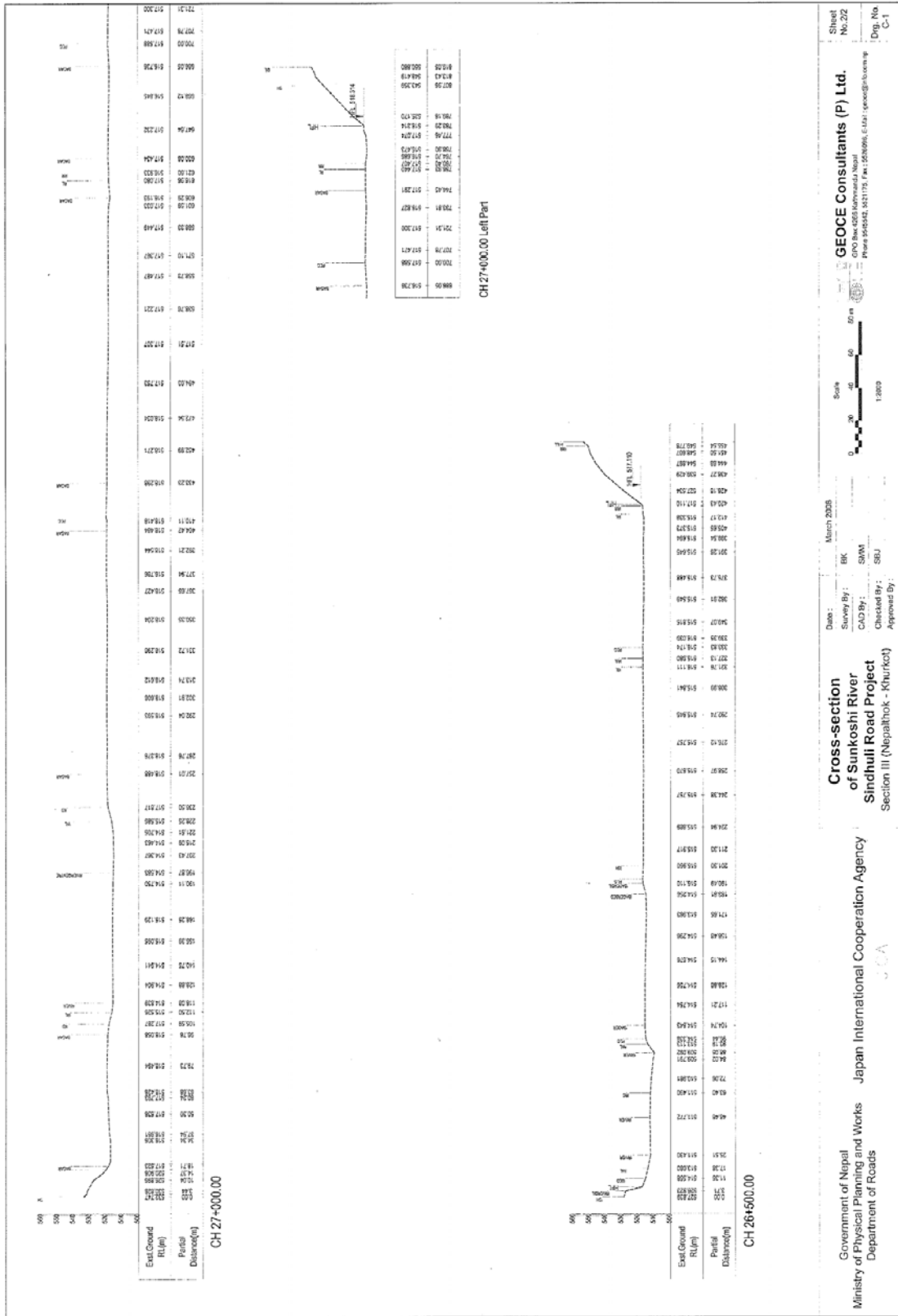


スンコシ川横断測量位置図



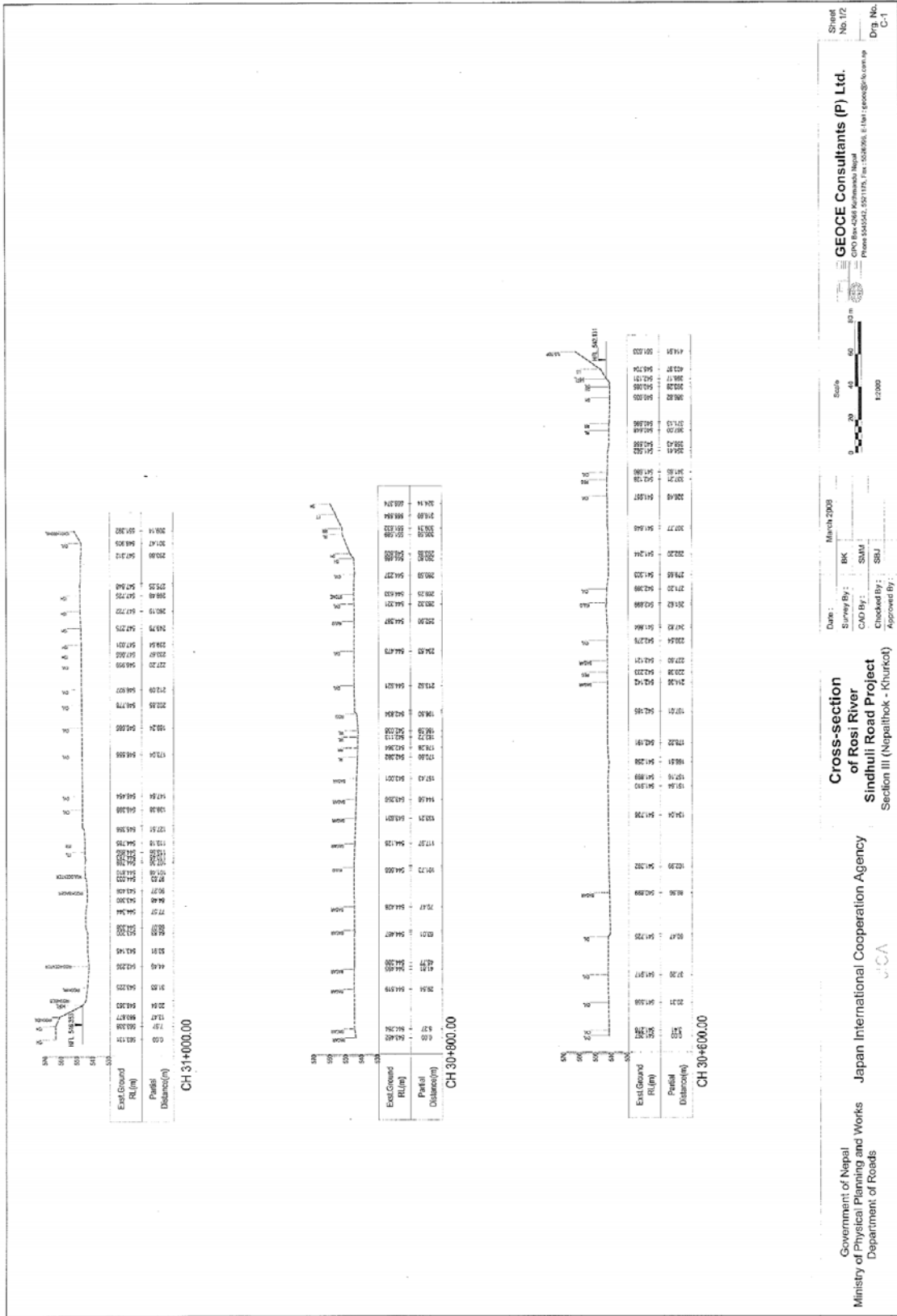
ロシ川横断測量位置図





河川横断測量実測図 (2/4)





河川横断測量実測図 (3/4)

Government of Nepal  
 Ministry of Physical Planning and Works  
 Department of Roads

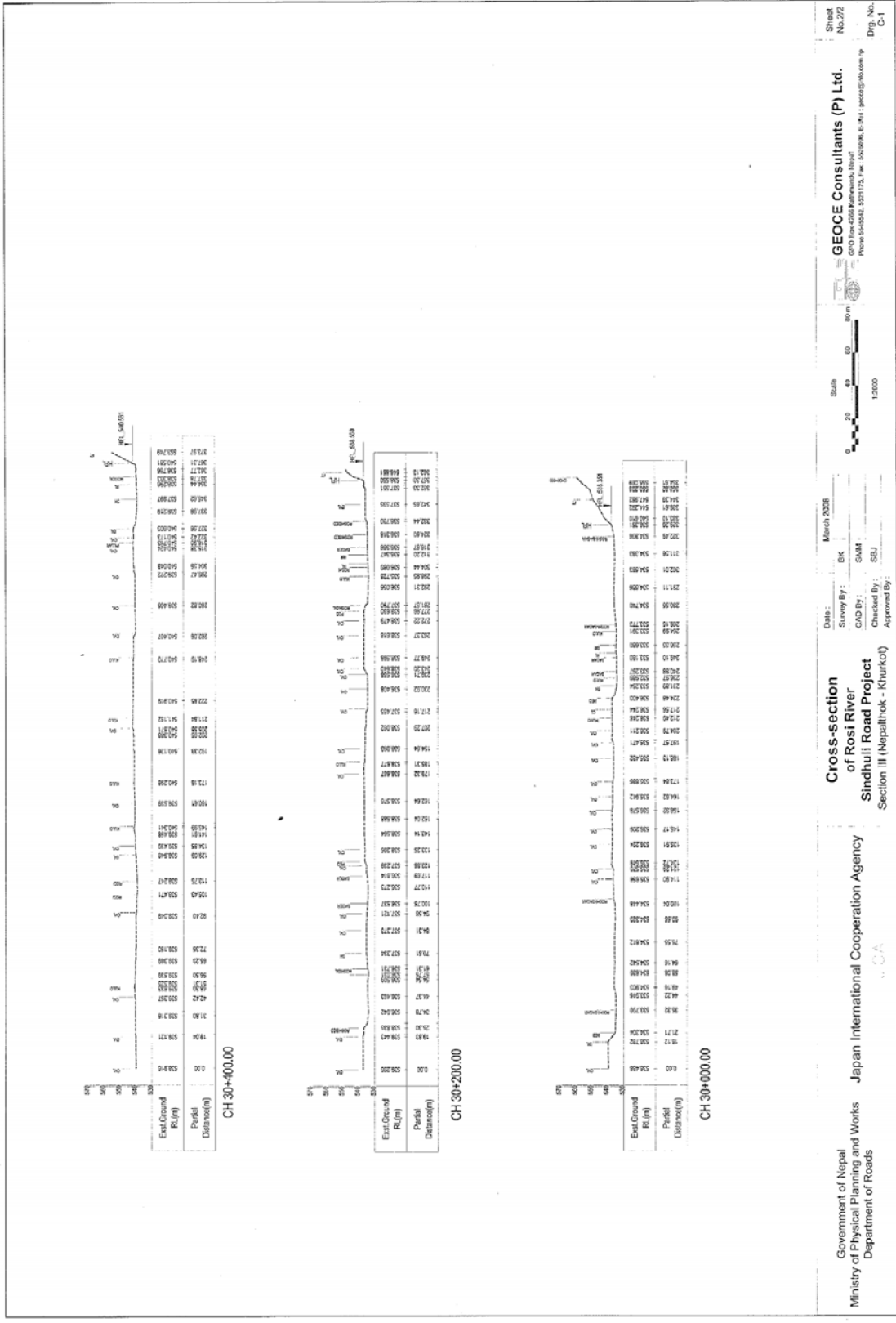
Japan International Cooperation Agency

**Cross-section  
 of Rosi River  
 Sindhuji Road Project  
 Section III (Nipalthok - Khurkot)**

Date: March 2003  
 Survey By: BK  
 CAD By: SAM  
 Checked By: SBU  
 Approved By:

Scale: 1:2500  
 0 20 40 60 80 m

Sheet No. 172  
 Drg. No. C-1  
 GECE Consultants (P) Ltd.  
 Office: Kathmandu, Nepal  
 Phone: 977-01-4221175, Fax: 977-01-4221176, E-mail: gece@gece.com.np



河川横断測量実測図 (4/4)

## 8-5 交通量調査結果

## 8 - 5 交通量調査結果

交通量調査結果を示す。

### TRAFFIC COUNT SURVEY

#### 1. General

This report covers the traffic count survey carried out for the Basic Design Study on the Project for the Construction of Sindhuli Road Section III in Nepal being carried out by the Japan International Cooperation Agency (JICA). The survey was being carried out by the GEOCE Consultants (P) Ltd at six different specified locations in accordance with the agreement made with JICA.

#### 2. Survey Area and Counting Hours / day

Six different locations (intersections) on Sindhuli Road and other roads were specified to carry out traffic count survey as follows:

S.No.	Name of Intersection	Counting Hours/ Time	No of days required
1	Dhulikhel	16 (4 AM to 8 PM)	2
2	Naubise	24 (6 AM to 6 AM)	1
3	Narayanghat	24 (6 AM to 6 AM)	1
4	Pathlaiya	24 (6 AM to 6 AM)	1
5	Bardibas	16 (4 AM to 8 PM)	2
6	Dhalkebar	24 (6 AM to 6 AM)	1

#### 3. Survey Team and Schedule of Work

Three different groups were being mobilized first to Dhulikhel, Naubise and Narayanghat on 18th March 2008 to carry out traffic survey and the surveying was started on the next day. The same groups were then mobilized to rest of the locations on 23 March 2008. List of personnel mobilized for the survey was as follows:

Group No	Name of Surveyors	Location	Date of Traffic count
1	1. Rajan Dhungel (Surveyor) 2. Charchit Shrestha (Surveyor) 3. Local Enumerators (3 nos per 8 hours shift)	Dhulekhel Pathlaiya	19, 20 March 2008 25 March 2008
2	1. Nawaraj Paudel (Surveyor) 2. Sudeep Dahal (Surveyor) 3. Local Enumerators (3 nos per 8 hours shift)	Naubise Dhalkebar	19 March 2008 25 March 2008
3	1. Murari Paudel (Surveyor) 2. Binita Dhungel (Surveyor) 3. Local Enumerators (6 nos per 8 hours shift at Narayanghat and 3 nos per 8 hours shift at Bardibas)	Narayanghat Bardibas	19 March 2008 25, 26 March 2008

Schedule of Work is attached as Annex -1

#### 4. Working Method

Orientation and preparation work for mobilization was being done at GEOCE office on 16-17 March 2008. Necessary formats as per the requirement of traffic count were being prepared and method of survey was explained to all surveyors.

Traffic surveying was started as per the schedule. Turning movement count at specified intersections was carried out. Vehicles were categorized in eight different parts as below:

- Car/ Van/ Jeep/ Pickup
- Mini Bus
- Bus
- Light Truck
- Medium and Heavy Truck
- Tractor
- Motorcycle
- Other

Number of categorized vehicles as above passing the survey locations was being counted manually in each direction in each hour using the specified format. The survey was carried out from 4:00 AM to 8:00 AM for 16 hours count for two consecutive week days and from 6:00 AM to 6:00 AM next day for 24 hours count on a week day.

Traffic count at intersections Pathlaiya, Bardibas (first day) and Dhalkebar (Intersection on East – West Highway) was being carried out on the same day (25 March 2008) as required.

The summary of traffic counting sheet was prepared and is appended as Annex – 2 of this report.

#### **5. Problem Encountered**

Traffic flow was disrupted At Narayanghat intersection during 13:00 hour to 14:00 hour on 19 March 2008 due to the "Traffic Closer (Chakka Jam)" announced by a political party, thus very limited vehicles were moving during this hour with respect to the other hours before and thereafter.

All the traffic survey was being carried out as per the schedule and to the required specification. No specific problem was encountered during the tenure of survey. Prior to the start of work, the Government body (Traffic unit / Police office) located nearest from each intersection was being notified with a letter and briefed about the surveying work by the respective surveyors.

表 交通量計測結果一覽表

Location	Survey Date and Time	Direction		Car Van Jeep	Bus		Truck		Tractor	Motor Cycle	Others Tempo etc	Total
		From	To		Mini Bus	Bus	Light	Medium/ Heavy				
Naubise	From	Kathmandu	Mugling	666	140	384	80	1037	3	362	2	2674
	March 19, '08 (Wed) 06:00	Mugling	Kathmandu	671	158	344	57	1131	1	298	2	2662
	to	Kathmandu	Daman	38	2	4	3	41	1	14	0	103
		Daman	Kathmandu	43	0	8	4	26	1	14	0	96
	March 20, '08 (Thu) 06:00	Mugling	Daman	3	0	0	0	1	0	4	0	8
		Daman	Mugling	4	0	0	1	1	0	6	0	12
	<b>Total</b>		Kathmandu	1418	300	740	144	2235	6	688	4	5356
		Mugling	1344	298	728	138	2170	4	670	4	5356	
		Daman	88	2	12	8	69	2	38	0	219	
Narayanghat	From	Kathmandu	Butwal	249	65	177	33	309	21	171	32	1057
	March 19, '08 (Wed) 06:00	Butwal	Kathmandu	193	56	206	32	336	20	192	30	1065
	to	Kathmandu	Hetauda	398	57	110	70	141	30	188	24	1018
		Hetauda	Kathmandu	349	49	115	43	122	34	134	40	886
	March 20, '08 (Thu) 06:00	Hetauda	Butwal	448	158	253	98	459	77	232	70	1795
		Butwal	Hetauda	392	146	214	87	352	65	277	52	1585
	<b>Total</b>		Kathmandu	1189	227	608	178	908	105	685	126	4026
		Butwal	1282	425	850	250	1456	183	872	184	5602	
		Hetauda	1587	410	692	298	1074	206	831	186	5284	
Pathlaiya	From	Kathmandu	Birgunj	173	65	69	26	629	33	306	73	1374
	March 25, '08 (Tue) 06:00	Birgunj	Kathmandu	184	71	68	33	850	46	296	75	1623
	to	Kathmandu	Bardibas	98	18	111	9	176	7	99	66	584
		Bardibas	Kathmandu	67	12	126	9	299	3	117	50	683
	March 26, '08 (Wed) 06:00	Bardibas	Birgunj	109	78	58	10	239	83	213	112	902
		Bardibas	Kathmandu	102	93	48	13	307	73	175	136	947
	<b>Total</b>		Kathmandu	522	166	374	77	1954	89	818	264	4264
		Birgunj	568	307	243	82	2025	235	990	386	4846	
		Bardibas	376	201	343	41	1021	166	804	364	3118	
Dhalkebar	From	Bardibas	Janakpur	64	14	86	5	101	17	208	68	559
	March 25, '08 (Tue) 06:00	Janakpur	Bardibas	66	19	77	7	108	20	200	38	535
	to	Bardibas	Kakarbhitta	82	9	112	8	233	7	105	26	582
		Kakarbhitta	Bardibas	58	8	112	3	246	13	158	8	606
	March 26, '08 (Wed) 06:00	Kakarbhitta	Janakpur	26	3	39	1	28	12	104	30	243
		Janakpur	Kakarbhitta	23	2	48	1	40	14	102	26	256
	<b>Total</b>		Bardibas	270	50	387	23	688	67	669	138	2282
		Janakpur	179	38	250	14	277	63	612	160	1593	
		Kakarbhitta	189	22	311	13	547	48	469	90	1687	
Dhulikhel	Average of	Kathmandu	Dolalghat	398	193	251	99	186	39	628	40	1834
	March 19, '08 (Wed) 04:00	Dolalghat	Kathmandu	350	153	258	99	141	23	567	50	1641
	to	Kathmandu	Sindhuli	237	17	83	32	61	15	280	17	722
		Sindhuli	Kathmandu	212	15	65	23	61	19	268	15	678
	and	Sindhuli	Dolalghat	43	6	7	6	9	4	50	15	140
	March 20, '08 (Thu) 04:00	Dolalghat	Sindhuli	44	3	8	3	13	3	42	13	129
	<b>Total</b>		Kathmandu	1197	378	636	252	448	95	1742	121	4869
		Dolalghat	834	354	524	206	348	69	1285	117	3737	
		Sindhuli	535	40	142	64	143	40	639	59	1662	
Bardibas	Average of	Kathmandu	Kakarbhitta	120	29	158	14	256	57	363	37	1034
	March 25, '08 (Tue) 04:00	Kakarbhitta	Kathmandu	113	33	141	10	245	54	389	37	1022
	to	Kathmandu	Sindhuli	45	4	28	3	22	11	154	8	275
		Sindhuli	Kathmandu	37	6	22	3	13	9	118	10	218
	and	Sindhuli	Kakarbhitta	23	3	19	2	13	15	64	7	146
	March 26, '08 (Wed) 04:00	Kakarbhitta	Sindhuli	20	1	13	2	9	11	65	10	131
	<b>Total</b>		Kathmandu	314	71	348	29	536	131	1023	91	2643
		Sindhuli	124	14	80	9	56	46	401	34	764	
		Kakarbhitta	276	65	330	28	522	137	880	91	2329	

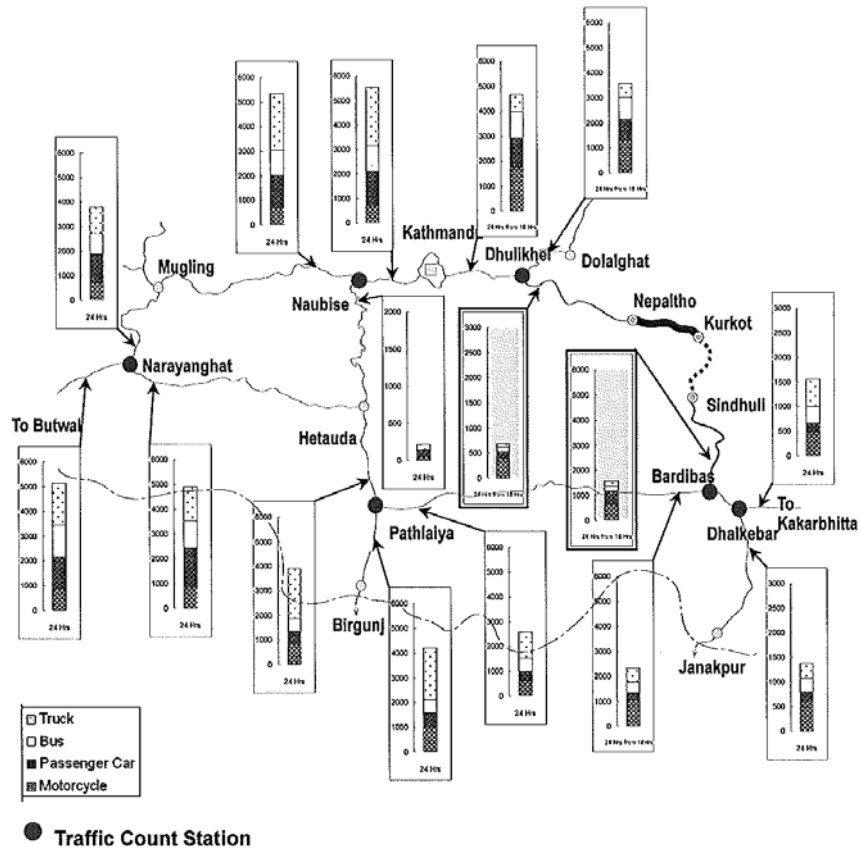


図 交通量計測結果