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Appendix A

Survey Status with respect to Road Sector Project of Sri Lanka.

1. Project Report - A004 Kirulapone Road, Godagama.
2. Project Report - B084 Pamankada Bridge, Horana
3. Project Report - B435 Orugodawatta, Ambatale.
4. Project Report - A024 Matara, S.Highway.
5. Project Report - B207 Katukurunda, Nagoda.
6. Project Report - B153 Hikkaduwa, Nayapamula Inc.
7. Project Report - B157 S.Highway, Aluthgama.
8. Project Report - A005 Nuwara Eliya, Badulla.
9. Project Report - A007 Hatton, Nuwara Eliya.
10. Project Report - A026 Udetenna, Mahiyangana.
11. Project Report - B199 Karadupana, Rabukkana.
12. Project Report - B409 Thalgodapitiya, Dombawala.
13. Project Report - A012 Puttalam, Anuradhapura.
14. Project Report - A008 Ingiriya, Rathnapura.
15. Project Report - A001 Nittambuwa, Kandy.
16. Project Report - A017 Galle, Akuressa, Deniyaya.
17. Project Report - B098 Denagama, Mulatiyana.
18. Project Report - B142 Hakmana, Thalahanduwa.
19. Project Report - A016 Bandarawela, Haliela.
20. Project Report - B044 Bandarawela, Welimada.
21. Project Report - A009 Galkulama, Rambewa.

22. Project Report - A009 Madawachchiya, Punewa.
23. Project Report - A014 Madawachchiya, NCP.
24. Project Report - A004 Wellawaya, Siyabalanduwa.
25. Project Report - A025 Siyabalanduwa, Ampara.
26. Project Report - A 031 Karathivu
27. Project Report - A011 Maradankadawala, Jayanthipura.
28. Project Report - A011 Jayanthipura, Tmadu.
29. Project Report - A010 Padeniya, Puttalam.

Appendix B

Preliminary Field Survey Questionnaire for Individuals - Stage 1

		Name :..... Designation:..... Org:.....
Feasibility Studies	Data Collection	
	Data Checking & Analysis	
	Selection of Project Alternatives	
	E.I.A.	
	Others (Specify)	
Engineering Design	Pavement	
	Drainage	
	Bridges & Culverts	
	Lighting	
	Safety	
Construction	Road Pavement	
	Bridges & Culverts	
	Lighting	
	Drainage	
	Safety	
	Provision for Utilities	
Operation & Maintenance	Survey & Investigation	
	Rehabilitation	
	Estimation	
	Preventive Maintenance	
Overall	Feasibility Studies	
	Engineering Design	
	Construction	
	Operation & Maintenance	

Appendix C

Preliminary Field Survey of ICT in Road Sector Infrastructure Development & Management

1. Target: Road Experts / Management Agencies

- 1.1 Name :-.....
- 1.2 Designation :-.....
- 1.3 Qualification :-B.Sc Eng. / B.Sc. / M. Sc / C. Eng / B.A. / Other
- 1.4 Organization :-.....

2. Feasibility Studies

2.1 In your opinion, how do you evaluate the usage if ICT in Feasibility studies in Road Sector?

	Very High	High	Moderate	Low	Very Low
Data Collection					
Data Checking & Analysis					
Selection of Project Alternatives					
E.I.A.					
Others (Specify)					

(Please indicate "x" for appropriate cage)

3. Engineering Design

3.1 In your opinion, how do you evaluate the usage of ICT in detailed Engineering Design in Road Sector?

	Very High	High	Moderate	Low	Very Low
Pavement					
Drainage					
Bridges & Culverts					
Lighting					
Safety					

(Please indicate "x" for appropriate cage)

4. Construction

4.1 In your opinion how do you evaluate the usage of ICT in construction in Road Sector?

	Very High	High	Moderate	Low	Very Low
Road Pavement					
Bridges & Culverts					
Lighting					
Drainage					
Safety					
Provision for Utilities					

(Please indicate "x" for appropriate cage)

5. Operation & Maintenance

5.1 In your opinion how do you evaluate the usage of Operation & Maintenance in Road Sector?

	Very High	High	Moderate	Low	Very Low
Survey & Investigation					
Rehabilitation					
Estimation					
Preventive Maintenance					

(Please indicate "x" for appropriate cage)

6.

6.1 What aspects are the most crucial for ICT?

	Most Important	Important	Less Important	Not Relevant
Methods				
Standards & Manual				
Equipment & Tools				
Human Resources				

Very High 100 - 60%
 High 60 - 40%
 Moderate 40 - 20%
 Low 20 - 5%
 Very Low 5 - 0%

Appendix D

The ICT Status Survey of Road Infrastructure Development

1.0 GENERAL

1.1 Organization :-.....

1.2 Years in Road Development Work

0 - 5	5 - 10	10 - 15	15 - 20	>20 (specify)

1.3 Type of Organization:

- 1) Govt, 2) Semi Govt, 3) Private, 4) NGO,
5) Other (Specify)

1.4 Is major work of your division/organization in Road Sector?

Yes/No

1.5 If No to above then specify

1.6 Tick the type of road work handled by your Organization and indicate its percentage when compared to the total road work:

Road Related Activity	Please Tick (√)	%
Feasibility Studies		
Detailed design		
Construction		
Maintenance		
Training		
Safety		
Security		
Research		
Other (specify).....		

1.7 Staff strength in your organization: please tick (√) appropriately to indicate persons in each area of work

Area of Road Work	0 - 10	10 - 50	50 - 100	>100 (Specify)
Feasibility Studies				
Detailed design				
Construction				
Maintenance				
Training				
Safety				
Research				
Other (specify).....				

1.8 Where does your organization mostly Operate

	%
Rural	
Urban	
Other (Specify).....	

1.9 Indicate the Category of roads your organization is involved in;

<i>Category of Roads</i>	%
Expressway	
A class	
B class	
C class	
Other class (Specify)	

1.10 What is your Average Revenue per year in Rupees millions?

- 1) 0-25 2) 25 -50 3) 50 -100
 4) >100(Specify)

2.0 ENABLING ENVIRONMENT

2.1 Is there an established organizational goal for ICT use? YES/NO

2.2 Is there an established goal for ICT use for Road Development?
 YES/NO

2.3 How do you develop policies for ICT?
 Please tick (√) appropriate box.

Government circulars	
Board Approved Memos	
Executive Level Memos	
No specific organizational policy	
Other (Specify)	

2.4 In your organization, do you have an ICT policy for Road works ?
 Please indicate appropriately

	Yes/ Under Preparation/Under Discussion/ No/Not Important
Feasibility Studies	
Detailed Engineering Design	
Construction	
Operation and maintenance	

Does your organization possess internet facilities? YES/NO

2.5 Indicate the type of internet connection (Pl indicate details)

	Tick (√) the Type	Number of Connections
Dedicated Line (64 kbps/512 kbps/2 Mbps) <i>(Delete or indicate appropriate speed)</i>		
ADSL		
Dial-up facility		
Wireless Broadband (eg. Vodaphone)		
Other (Specify).....		

2.6 Do you have a policy to provide internet facilities to the staff? Please tick (√) appropriate box.

Engineers and other Professional	
Administrators	
Technical Officers	
Management /Technical Assistants	
Minor staff	
Other (Specify).....	

2.7 Do you have E-mail facilities? YES/NO

2.8 Do you have an intranet to manage you official activities, memo exchange, etc. ?
YES/NO

2.9 Indicate your management through a computer network

Description of Your Organization Task	Tick (√) Work and Mode Appropriately			What is the % of Task by combination of these Modes
	Select Work Type	Dedicated Intranet	Email service	
Attendance				
Work Progress				
Official Memo				
Design Calculations				
Access of Org. Library				
Progress Claims/Vouchers				
Payments				
Other..... specify				

2.10 Do you have a policy to provide e-mail facilities to the staff?
Please tick (√) appropriate box.

Engineers and other Professional	
Administrators	
Technical Officers	
Management /Technical Assistants	
Minor staff	
Other (Specify).....	

2.11 According to best estimates, what is the approximate expenditure for ICT promotion last year? (Rs. Million) *Please tick (√) appropriate box*

0 - 2	2 - 5	5 - 20	20 - 50	>50 (Specify)

2.12 What do you expect as ICT promotion expenses for the current year? (Rs. Million) *Please tick (√) appropriate box*

0 - 2	2 - 5	5 - 20	20 - 50	>50 (Specify)

2.13 Does your Organization possess an identified a Policy on Obtaining Consultancy Services for Road Infrastructure ICT Improvement (provide an year of commencement of action)

	Policy/Method	Year
Clear and Organization Specific		
Only Government Accepted Principle		
Based on Need and Understanding		
No Consultants are hired		
Other (Specify).....		

3.0 INSTITUTIONAL ROLE

3.1 Do you have a separate unit for ICT? YES/NO

3.2 If Yes indicate the commencement year

3.3 ICT Tasks Assigned and executed by the. Organization *Please tick (✓) appropriate box*

	By ICT unit Indicate %	By Individual Persons in other Units Indicate %
Computer or network operation		
Application identification		
Tool identification		
Hardware Repair and Maintenance		
Software installation and Maintenance		
Email and Internet Monitoring/Control		
Facilitating work groups		
Evaluation and progress monitoring		
Specialized Technical tasks		
Other (Specify).....		

3.4 Do you have a specific budget allocation for ICT in each year?
YES/NO

3.5 What is the approximate expenditure (Rs. Million) for ICT last year? *Please tick (✓) appropriate box*

0 - 2	2 - 5	5 - 20	20 - 50	>50 (Specify)

3.6 What do you expect as ICT promotion expense (Rs. Million) for this year?
Please tick (✓) appropriate box

0 - 2	2 - 5	5 - 20	20 - 50	>50 (Specify)

3.7 Staff attached to the ICT Division *Please tick (✓) appropriate box*

	0 - 5	5 - 10	10 - 15	> 15 (Specify)
Engineers				
Software Developers				
System Analysts				
Computer Operators				
Technical Officers				
Other (Specify).....				

4.0 MANAGEMENT INSTRUMENTS

4.1 Indicate Professional Staff Strength within your organization. *Please tick (✓) appropriate box*

	0-2	2-5	5-10	10-25	>25 (Specify)
Engineers					
Planners					
Architects					
Accountants					
Quantity Surveyors					
Lawyers					
Technical Officers					
Other ICT Qualified staff					
Other					

4.2 Professional staff with Graduate/Postgraduate Qualifications ✓) *appropriate box*

	0-2	2-5	5-10	10-25	>25 (Specify)
Bachelors or Equivalent					
Up to Post Graduate Diploma only					
Up to Masters Degree					
Up to Phd Degree					
With Full Professional Qualifications					
Other					

4.3 Professional Staff with Postgraduate qualifications Specific to Road Development
Please tick (✓) appropriate box

	0-2	2-5	5-10	10-25	>25 (Specify)
Engineering					
All other Disciplines					
Up to Masters Degree					
Up to Phd Degree					
With Full Professional Qualifications					

4.4 Do you have a Consultant for ICT in Road Sector Infrastructure Development? **YES/NO**

	Indicate the Number	Remarks
Ph.D level		
Masters level		
Full Professional with over 20 yrs experience		

4.5 Indicate Strength of ICT Equipment within your organization. *Please tick (√) appropriate box*

Type of Equipment	0-2	2-5	5-10	10-25	>25 (Specify)
Computers					
Laser Printers					
Colour Laser Printers					
Scanners and Digitizers					
Photocopiers					
Fax machines					
Fixed phones					
Mobile Phones					
Satellite phones					
Differential GPS Units					
Handheld GPS Units					
Automatic/One Man Surveying Equipment					
Data Loggers					
Automatic Electronic Gauges					
Security/Surveillance System Hardware					
Attendance System, Hardware					
Other					
.....					
.....					
.....					

4.6 Specify software used for Road Infrastructure Development *Please tick (√) appropriate box*

	0 - 5	5 - 10	10 - 15	> 15
General purpose software Specify below				
Self Developed and Verified Custom Software				
Planning				
Feasibility studies				
Detailed Engineering Design				
Construction				
Operation and Maintenance				
Payments				
Other				

4.7 Do you conduct training programmes to develop your staff on ICT in road infrastructure development? **YES/NO**

Please tick (✓) appropriate box

	0 - 5	5 - 10	10 -15	> 15 (Specify)
Feasibility studies				
Detailed design				
Construction				
Operation and Maintenance				
Financial Monitoring				
Contract Administration				
Legal Safeguards				
Other				

4.8 Do you conduct training programmes to develop your staff on new ICT Developments? **YES/NO**

Please tick (✓) the appropriate box for number of short term training programs per year.

	0 - 5	5 - 10	10 -25	25 -50	> 50 (Specify)
Less than one week					
1 – 2 weeks					
2- 4 weeks					
Other					

5 SELF ASSESSMENT

5.1 Level of competence with regard to road infrastructure development with your present in-house staff *Please tick (✓) appropriate box*

	Excellent	Very Good	Good	Moderate	Do not practice
Feasibility studies					
Detailed design					
Construction					
Operation and Maintenance					
Financial Monitoring					
Contract Administration					
Legal Safeguards					
Other					

5.2 What is your active and committed experience with respect to following *Please tick (√) appropriate box*

	0 - 5	5 - 10	10 -15	> 15 (Specify)
Feasibility studies				
Detailed design				
Construction				
Operation and Maintenance				
Financial Monitoring				
Contract Administration				
Legal Safeguards				
Other				

5.3 What is your level of ICT use? *Please tick (√) appropriate box*

	Excellent	Very Good	Good	Moderate	Do not practice
Feasibility studies					
Detailed design					
Construction					
Operation and Maintenance					
Financial Monitoring					
Contract Administration					
Legal Safeguards					
Other					

5.4 How do you assess the National Level of ICT use in Road Sector Infrastructure Development (Please make a statement(s))

.....

.....

.....

.....

.....

5.5 How would you Rank the National Level of ICT use in Road Sector Infrastructure Development Please tick (√) appropriate box

Excellent	
Very Good	
Good	
Moderate	
A huge improvement is necessary	

5.6 How Satisfied are you with the present National Trend of ICT use when looking at the past 5-7 Years

Very Highly	
Highly	
Averagely	
In adequate	
No specific Change	
Other (specify).....	

Name of Contact:-.....

Designation:-.....

Date:

This data collection is carried out for a M.Sc Degree Research Programme at the University of Moratuwa.

.....
 Eng. B.K.U.A. Wickramasinghe (Phone – 0777510395)

Name and Signature of Data Collector

Appendix E

Preliminary Survey Questionnaire for individuals Stage 1

List of Organizations.

1. Road Development Authority
2. Resource Development Councils
3. China Geo Engineering
4. Maga Engineering
5. China Harbour Engineering
6. International Construction
7. Access Engineering
8. Sri Lanka Ports Authority
9. Sri Lanka Army

Appendix F

Preliminary Survey Questionnaire for Individuals Stage 2

List of Organizations

1. Road Development Authority
2. Resource Development Councils
3. China Geo Engineering
4. Maga Engineering
5. China Harbour Engineering
6. International Construction
7. Access Engineering
8. Sri Lanka Ports Authority
9. Sri Lanka Army
10. Nawala Construction
11. University of Moratuwa
12. C.E.C.B
13. Vasiri Construction
14. Isuru Construction
15. S.L.L.R.DC
16. Brown & Co.Ltd.

Appendix G

Organizational Survey

List of Organizations

1. International Construction Consortium
2. Sri Lanka Army -Engineers Brigade
3. State Development & Construction Corp.
4. Sri Lanka Army -Engineer Services
5. China Geo Engineering
6. Kumagai Gumi
7. Sri Lanka Air Force
8. Sri Lanka Ports Authority
9. Sri Lanka Navy
10. China Harbour Engineering
11. Road Development Authority
12. Access Engineering
13. Vasiru Construction (Pvt) Ltd.
14. Maga Construction Company (Pvt) Ltd
15. Chandranayaka and Co.

Preliminary Field Survey of ICT in Road Sector Infrastructure Development**1. Feasibility Studies.**

	Very High	High	Moderate	Low	Very Low	No comment
Data Collection	14	25	15	14	4	1
Data Checking & Analysis	10	29	27	5	2	
Selection of project Alternatives	1	12	37	19	3	1
E.I.A	6	12	23	27	5	

2. Engineering Design

	Very High	High	Moderate	Low	Very Low	No comment
Pavement	16	29	19	9		
Drainage	9	22	27	13	2	
Bridges & Culverts	4	27	39	2		1
Lighting	3	18	15	27	8	2
Safety	4	10	13	19	26	1

3. Construction

	Very High	High	Moderate	Low	Very Low	No comment
Road Pavement	14	15	29	13	1	1
Bridges & Culverts	6	25	35	5		2
Lighting	2	15	24	17	13	2
Drainage	8	15	17	29	3	1
Safety	3	5	15	34	14	2
Provision for utilities	2	4	12	20	32	3

4. Operation & Maintenance

	Very High	High	Moderate	Low	Very Low	No comment
Survey & Investigation	29	18	20	6		
Rehabilitation	6	21	13	26	6	1
Estimation	11	14	44	4		
Preventive Maintenance	2	3	13	41	13	1

Appendix H

SURVEY OF ICT IN ROAD SECTOR INFRASTRUCTURE DEVELOPMENT & MANAGEMENT

I No	FEASIBILITY STUDIES					ENGINEERING DESIGN					CONSTRUCTION						OPERATION & MAINTENANCE			
	i	ii	iii	iv	v	i	ii	iii	iv	v	i	ii	iii	iv	v	vi	i	ii	iii	iv
1	L	L	M	H	VL	M	M	M	VL	L	H	M	L	L	VL	L	L	M	M	M
2	L	H	L	M	VL	H	M	M	VL	M	H	H	VL	L	VL	L	VL	M	M	M
3	M	L	M	M	L	M	M	M	VL	L	M	M	VL	L	L	L	L	M	M	M
4	L	H	M	L	L	H	M	M	VL	L	H	M	L	L	VL	L	M	M	M	M
5	L	L	M	H	L	M	M	M	L	L	M	M	VL	L	L	L	M	L	M	H
6	L	M	H	L	VL	H	M	M	VL	L	M	H	VL	L	L	L	VL	H	M	M
7	L	L	M	H	VL	M	M	M	VL	L	H	M	L	L	L	L	L	M	M	M
8	L	H	M	L	VL	H	M	M	L	L	H	M	L	L	L	VL	L	M	H	M
9	M	L	M	H	L	M	M	M	VL	L	H	M	VL	L	L	L	L	L	M	H
10	M	M	M	L	VL	M	M	M	L	L	H	H	VL	L	VL	L	L	M	M	M
11	M	L	M	M	L	M	M	M	L	L	M	H	VL	L	M	VL	VL	M	H	M
12	M	L	L	M	M	M	M	L	M	M	L	L	L	M	L	M	M	M	M	M
13	M	L	M	L	M	M	L	M	L	M	M	M	M	L	VL	L	H	M	M	M
14	M	L	M	H	VL	L	M	H	VL	M	M	L	VL	M	H	VL	VL	M	M	H
15	M	M	M	M	L	M	M	L	VL	M	L	L	L	L	M	M	M	M	M	M
16	L	L	M	M	H	M	M	M	M	M	L	L	L	L	L	H	M	M	L	M
17	L	M	L	M	L	L	L	M	L	H	M	L	M	L	L	L	M	M	M	M
18	L	M	L	M	M	M	M	M	VL	L	L	L	L	H	M	VL	M	H	L	M
19	M	M	M	M	VL	M	L	H	L	L	L	M	M	H	VL	VL	M	M	M	M
20	M	L	L	M	M	L	M	M	L	M	M	L	M	M	L	L	L	M	H	M
21	L	M	M	M	M	L	M	M	M	M	L	L	L	M	M	M	L	H	L	M
22	L	M	H	M	L	M	M	L	M	M	L	L	M	L	M	L	M	H	L	L
23	L	L	M	L	H	M	L	H	VL	M	L	M	L	L	L	M	M	M	M	L
24	L	M	H	M	L	M	L	L	L	M	H	L	VL	L	M	M	VL	M	M	M
25	L	M	M	M	VL	L	L	M	L	M	M	L	L	L	M	VL	VL	H	M	M
26	M	L	M	M	VL	L	L	H	VL	M	L	M	VL	L	M	L	VL	H	H	L
27	M	L	L	L	M	L	M	H	L	M	H	M	VL	M	VL	VL	VL	H	M	M
28	H	M	M	L	VL	L	L	M	M	M	L	L	M	M	H	VL	M	M	M	M
29	M	M	M	L	VL	L	L	M	L	H	M	M	VL	M	L	L	M	M	M	L
30	L	M	M	M	M	M	M	L	L	L	L	L	M	M	L	L	L	M	M	H
31	L	M	M	M	L	M	M	M	VL	L	L	L	M	M	M	M	VL	M	H	M