

SEACAP 019

**Development of Local Resource
Based Standards
Task 2
Engineering Natural Surface
Roads: Data Collection**

TRL Ltd

In Association with

KACE and Intech Associates



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Background to Field Data Collection

The next key stage of the project is to survey existing ENS roads in Cambodia. Sections of road that have performed well and sections that have performed badly need to be sampled and their characteristics recorded in order to determine the relative importance of each factor and to define the conditions that need to be met for an ENS to be viable.



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Background to Field Data Collection

The Technical Paper “Behaviour of Natural Surfaces for Roads” includes in it a list of key field and laboratory criteria identified for analysis.

Data to be collected from representative range of ENS roads from Sim Reap; Kampot, Kandal and Ratanakirri.



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Field Data Collection

Documents drafted and trialed:

- Data Sheet 1: Road Information
- Data Sheet 2: Section Information
- Data Sheet 3: Site Sketch
- Site Procedures Guide



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**ENS ROAD
CONDITION
SURVEY**

- Define road start (GPS)
- Drive length of road – define end (GPS)
- Select representative survey sections

ROAD LINK - PLAN

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Road Information

- ❑ Road Location
- ❑ Terrain
- ❑ Geology
- ❑ General Condition
- ❑ Traffic

- ❑ Rainfall
- ❑ Maintenance
- ❑ Construction History
- ❑ Access

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Road Information

Province		
District		
Commune		
Road Name		
Road Reference Number	a.	b.
Start Point	E	N
End Point	E	N
Road From		
Road To		



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Section Data Sheet

- Location
- Section Geometry
- Surface Condition
- Drainage
- Surface Materials

- Repairs
- Passability (Risk)
- In Situ Tests
- Samples
- Access



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Field Data Collection

Chainage	0-10		10-20		20-30		30-40		40-50	
Block	1		2		3		4		5	
Appearance										
Loose Material										
Corrugations										
Erosion										
Ruts										
Potholes/Depressions	a	b	a	b	a	b	a	b	a	b
Crown Height	L	R	L	R	L	R	L	R	L	R
Shape										



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Typical Data Codes

Corrugations	Depth of corrugations <table border="1" style="margin-left: 20px; width: 100%;"> <tr><td>1</td><td>Negligible</td></tr> <tr><td>2</td><td><15mm deep</td></tr> <tr><td>3</td><td>15-50mm deep</td></tr> <tr><td>4</td><td>>50mm deep</td></tr> </table>	1	Negligible	2	<15mm deep	3	15-50mm deep	4	>50mm deep	mm												
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2	<15mm deep																					
3	15-50mm deep																					
4	>50mm deep																					
Erosion	Visual assessment of any erosion effects on the pavement <table border="1" style="margin-left: 20px; width: 100%;"> <tr><td>1</td><td>Negligible</td></tr> <tr><td>2</td><td>Slight (<10%)</td></tr> <tr><td>3</td><td>Moderate (10-25%)</td></tr> <tr><td>4</td><td>Severe (25-50%)</td></tr> <tr><td>5</td><td>Total (>50%)</td></tr> </table>	1	Negligible	2	Slight (<10%)	3	Moderate (10-25%)	4	Severe (25-50%)	5	Total (>50%)	Code										
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Ruts	Depth of any ruts formed in the wheel track; measured using straight edge and tape	mm																				
Potholes or Depressions	Assessment of potholing or depressions within the survey section a. Size <table border="1" style="margin-left: 20px; width: 50%;"> <tr><td>1</td><td>Just visible</td></tr> <tr><td>2</td><td>Small depressions <20mm deep</td></tr> <tr><td>3</td><td>Large depressions 20-50mm deep</td></tr> <tr><td>4</td><td>Large depressions 50-75mm deep</td></tr> <tr><td>5</td><td>Very large - >75% road width</td></tr> </table> b. Extent <table border="1" style="margin-left: 20px; width: 50%;"> <tr><td>0</td><td>None</td></tr> <tr><td>1</td><td><10% of section</td></tr> <tr><td>2</td><td>10-25% of section</td></tr> <tr><td>3</td><td>25-50% of section</td></tr> <tr><td>4</td><td>> 75% of section</td></tr> </table>	1	Just visible	2	Small depressions <20mm deep	3	Large depressions 20-50mm deep	4	Large depressions 50-75mm deep	5	Very large - >75% road width	0	None	1	<10% of section	2	10-25% of section	3	25-50% of section	4	> 75% of section	Code
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Field Data Collection



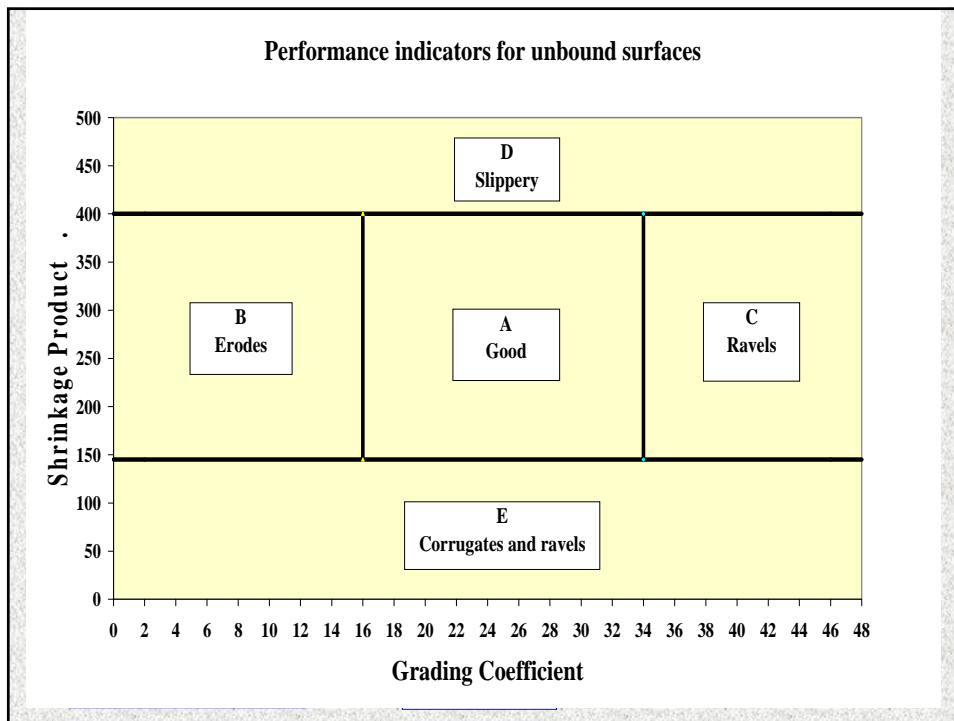
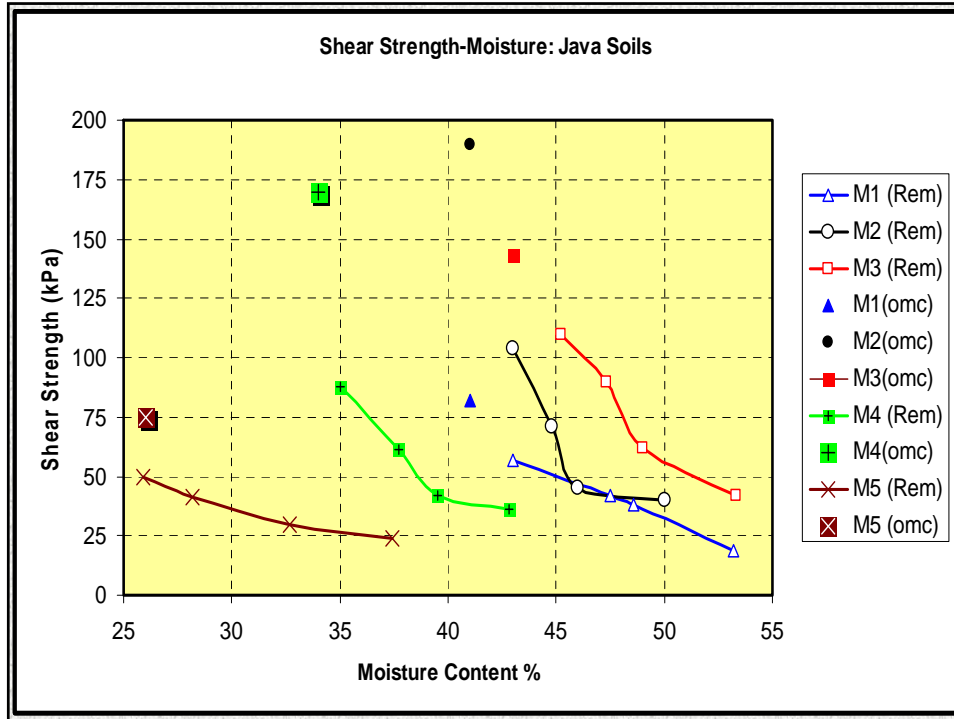
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Key Laboratory Tests

- Particle size
- Plasticity
- Linear shrinkage
- Compaction
- CBR
- Shear strength (Vane)



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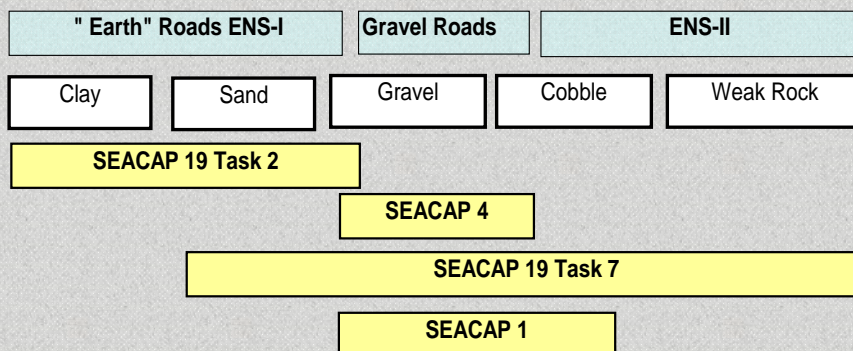
Links to Other Rural Road Databases

- ❑ SC4 (Vietnam): Gravel Performance
- ❑ SC1:(Vietnam): Pavement Condition
- ❑ SC19: Task7 Construction Materials
- ❑ SC19: Task 5 – Road Condition



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Links to Other Rural Road Databases



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