

### 1.1. Introduction to SEACAP17

- Contract duration: 15/Jan/06 – 14/Sep/07
- Completion: 23/Aug/07
- Employer: Ministry of PWT
- Consultant: Roughton International (UK) in association with Lao Transport Engineering Consultant
- Contractor: Guangdong No.3 Water Conservancy and Hydroelectric Engineering Board (PR China)

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### 1.3.1. Geography Condition

- Construction of roads access to villages locate in the area of National Road No. 3 Project in Houaxai District, Bokeo Province
- All existing roads are tracks and paths for pedestrians, and only some section farm tractor can pass in dry season
- Topography condition of the project area most access roads lay in rolling terrain, some sections are in flat terrain, low level and flooded area

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### Existing Condition R. N. 5



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### 2.1. Detailed Survey and Design for Construction

- Details topographic survey and data collection
- Sub-soil investigation on the alignment, conducted test pits at 50m interval and collected sample to Laboratory
- DCP test on the alignment at 10m interval and 5 tests per cross-section
- Material sources investigation

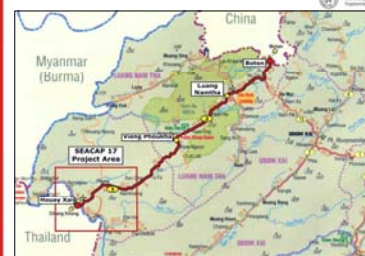
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### 1.1. Introduction to SEACAP17

- Construction of Pavement Trials with low cost pavements for low volume road in rural accesses
- Fund G ADB Loan for the construction, Grant aided by DfID for Technical Assistant and construction supervision, and budget from the Government of Lao PDR
- Collaboration between MPWT, SEACAP (DfID) and ADB on NEC Project

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### 1.3 NEC Project Location



### Existing Condition R. N. 3.2



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### 2. SEACAP PAVEMENT TRIAL

Sm.	Road No.	Type of Pavement	Length (m)
1	2	Hand Packed Stone	500
2	3.2	Single Otta Seal	250
3		Double Otta Seal	250
4		Engineered Natural Surface	400
5		Mortared Stone	600
6	5	Concrete Paving Block	500
7		Bamboo Reinforced Concrete	575
8		Geo-cell	400
9	8	Sand Seal	665
Total length (m):			4,140

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### 1.2. Objectivity of SEACAP17

- Use of machine in combination with labour based in construction and maintenance
- Use of local resources and use of natural material is available in location of project
- Manpower development, local people can continue the construction and maintenance of access roads by apply technique and construction method gained from this trials

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### Existing Condition R. No.2



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### End of Introduction



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### South East Asia Community Access Programme (SEACAP 17)

DFID Department for International Development www.roughton.com

### 1.1. Introduction to SEACAP17

- Number of Roads = 7F total length = 28.424km. Carriageway width 1x3.50m, Shoulder width 2x0.50m. Formation width 4.50m
  - SEACAP pavement trials consist of 8 types F total length = 4.140km (see details in next section)
  - Total construction cost = 9,558M LAK (1,006,001\$)
    - { normal gavel road = 7,879M LAK (829,335\$)
    - { trial pavement = 1,679M LAK (176,666\$)
- (cost as above is actual construction cost)

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### 1.4. Existing track before construction



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### Existing Condition R. N. 8



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## 2.2.2 OTTA SEAL



- Construction Method is the same as Chip Seal, it comprises of double seal and single seal Otta seal
- Seal coat MC-3000, rate 1.6 – 1.8 l/m<sup>2</sup>, grain size of aggregate 0 - 13mm, rate 0.015 m<sup>3</sup>/m<sup>2</sup>
- Prime coat MC-70, rate 0.85 l/m<sup>2</sup>
- Crushed Stone Base Course 150mm thick, CBR ≥80%
- Granular Sub-base 120mm thick, CBR ≥25%

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## Bamboo R.C.



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## 2.2.5 Concrete Paving Block



- Use of precast concrete block on approved sub-base/sub-grade
- Method of construction is the same as paving block/tile on side walk or on a yard
- Joint between block shall be sealed by sand or crush dust, or dry mortar. This trial sealed by sand mixed with soil (1/3 by volume soil/sand)

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## Hand Packed Stone



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## 2.2.1. Sand Seal



- Seal coat MC-3000, rate 0.80 l/m<sup>2</sup> and spreading sand covers with a rate of 0.012m<sup>3</sup>/m<sup>2</sup>. Use of steel wheel roller 12t compacts entirely
- Prime coat MC-70, rate 0.85 l/m<sup>2</sup>
- Crushed stone base course 150mm thick, CBR ≥80%
- Granular sub-base 120mm thick, CBR ≥25%
- Selected sub-grade 150mm thick, CBR ≥7% (depending upon existing sub-grade?)

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## Bamboo R.C.



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## Geocell



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## Hand Packed Stone



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## 2.2 Details of Pavement Structure



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## 2.2.3 Bamboo R.C.



- Construction method is the same as the method of construction of PCC pavement with wire mesh reinforcement, but this trial use of bamboo mesh instead of wire mesh
- Bamboo shall have a min. thickness of 5mm, min. age of 4 years, and dried
- Joint between concrete slab may or may not install Dowel Bar
- This trial Dowel Bar was not installed, but max. slab length = 5m

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## Geocell



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## 2.2.6 Hand Packed Stone



- Use of stone from quarry or from river place close to each other on approved sub-base/sub-grade
- Inserted small stone or gravel into the void, then fill of sand or crush dust mix with smaller chips
- Watering and use of light roller compact lightly
- Stone may or may not be dressed its shape, depending upon the objectivity of the project
- Method of construction is similar to Water bound Macadam construction method

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## Detailed Survey and Design for Construction



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## Otta Seal Pavement



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## 2.2.4 Geocell



- Use of plastic cell with a specific thickness installs on approved sub-based/sub-grade surface, then pour concrete into the cells and compact by hand lightly
- Plastic cell is used as a formwork for insitu cast concrete block. Plastic cell shall be left on the pavement and embedded in the concrete and it cohered all concrete blocks flexibly on the pavement
- Thickness of Geocell in this trial are G 75mm, 100mm, 150mm

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## Concrete Paving Block



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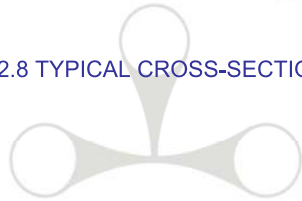
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## 2.2.8 TYPICAL CROSS-SECTIONS



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## Mortared Stone



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## 2.2.7 Mortared Stone



- Method of construction is the same as Hand Packed Stone but use of cement mortar fill of joint between stones, it is similar to grouted stone riprap for protection
- Hand Packed Stone or Stone Packing has ever applied for heavy maintenance on National Road No. 8 in Borkhamsay Province. But the size of stone is thicker (25 – 30cm), the joint was filled by bitumen and overlaid by chip seal
- This project used stone thickness of 10cm for Hand Packed Stone and 6cm for Mortared Stone

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