

# **ANNEX VIII-1**

## **FIELD VERIFICATION**

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## **1. Introduction**

The Eastern part of the Study on the establishment of GIS base data for the Kingdom of Cambodia is covered four provinces: Rattanak Kiri, Mondul Kiri, Stung Treng and Kratie province. Through the study the GIS base data and topographic map at scale 1/100,000 will produced.

The data sources used for data capture in the eastern part of the Study area are aerial photograph of scale 1/25,000, 1996 and SPOT satellite with resolution 10m, date of SPOT capture varied from 1998 to 2000.

Using the above data sources, the infrastructure data were extracted as GIS base data and the sources for producing topographic map (scale 1/100,000). According to the date of data sources and working only in the project office, the accuracy of interpretation of the infrastructure data is not good enough as based data. To improve the data quality of the study, the field verification is needed. So, field verification should be conducted for very map sheet to fill up and correct the missing data such as new bridge and new development constructions (school, temple..). In the case, the field verification using hand GPS has been introduced to apply as field verification method for the study.

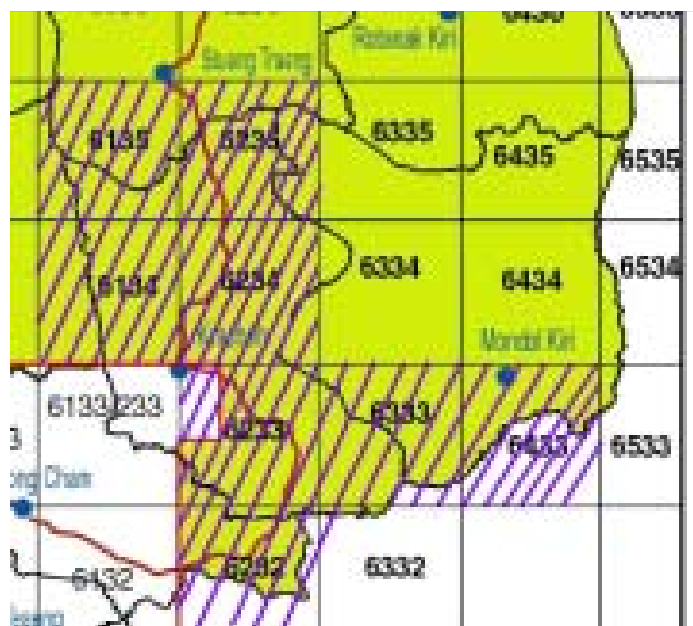
## **2. Objectives**

- To improve the quality of GIS base data and raw data of topographic map.
- Apply the field verification by using hand GPS

## **3. Field verification area**

The field verification methodology have been conducted on the map sheet of the following picture (Sheet No. 6232, 6233, 6234, 6235, 6134, 6134, 6333 and 6433)

Figure 3-1 Field Verification Area



#### 4. Field verification methodology

This field verification using hand GPS is the first method that was selected by the expert of the project to apply in Cambodia for accuracy improvement of GIS base data as well as topographic map scale 1/100,000.

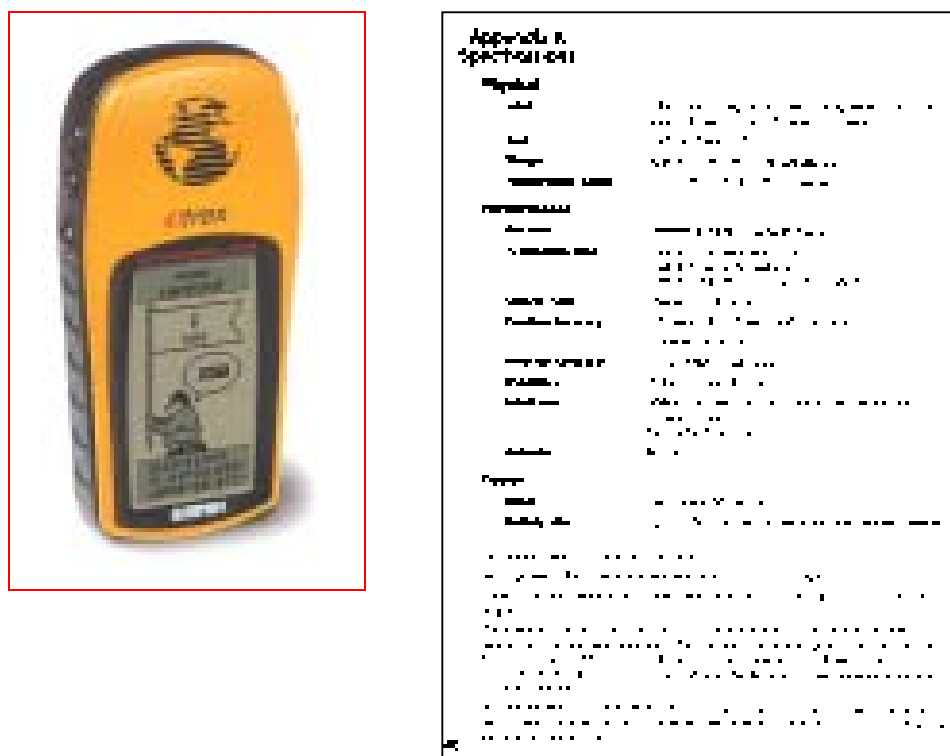
The methodology covered:

1. On the field pick up the coordinate (geographic location) of unclear or missing features are not presented on the draft map.
2. Prepare the description of picked up location in (1)
3. Plot the result of field verification (picked up location of (1)) on the draft map
4. Evaluation the result of field verification for every map sheet
5. Update the GIS base data and topographic map scale 1/100,000 by using the final result of the field verification

## 5. Materials used

### 1- Hand GPS

**Figure 5-1 Hand GPS**



### 2- Draft topographic map sheet, scale 1/100,000

### 3- Scale bar

**Figure 5-2 Scale Bar**



### 4- Photo camera

### 5- Field survey form

### 6- Information of the local guide

## **6. Applying the field verification by using GPS for the selected map sheets**

The field verification was conducted along national road No7 and the road network that connect from the national road to the communes.

### **(1) Map sheet 6232**

Through the field verification, it was notified:

- The code of existing national road No7 should be change because it is under reconstruction as ASEAN Highway standard.
- Some of main roads connected between communes to national road should be change code No. These roads were constructed after 1996 by Rural development programs.
- Some features (such as bridges) were not presented on the draft map due to miss understanding of aerial photo interpretation processing. These features were updated by picked up the real world coordinate from the field using hand GPS.
- Most the roads and bridge data of map sheet 6232 were completed updated. The sample points will be indicated in the [ANNEX1](#).

### **(2) Map sheet 6233**

The summary of field verification indicated in the following:

- The code of existing national road No7 should be change because it is under reconstruction as ASEAN Highway standard.
- The some parts of main roads along both sites of Mekong river were changed the code from 5 to 4.
- Some others roads connected to national road No 7 were changed the code from 5 to 4.
- The bridge locations along the national road No 7 from Memoute to Kratie were added on the map sheet.
- There are new immerges of road connection between Mondulkiri to Snoul and Chhlong.

### **(3) Map sheet 6234**

The summary of field verification indicated in the following:

- The bridge locations along the national road No 7 from Kratie to Stung Treng were added on the map sheet.

- The changing of rural roads mostly located around the provincial town for example the new connection from the national road to Kolap village, the road connected from national road to Phnom Bok resort.
- Most of the other national roads in the map sheet are in bad condition except the road connected from

**(4) Map sheet 6235**

- The bridge locations along the national road No 7 from Stung Treng to O Krieng and the national road No 78 from O Pongmaon to Tonle Sre Pok were added on the map sheet. All bridge location were not presented on the draft map.
- The national road No 7 from O Kreing to O Russey Kandal was change the code from 1 to 5; from O Russey Kandal to O Pongmaon the code was changed from 3 to 4 and code 4 to 1 was change from O Pongmaon to Stung Treng.
- The national road No 78 from O Pongmaon to Tonle Sre Pok was changed the code from 3 to 4.

The samples collection will be presented on the [Annex 6235](#).

**(5) Map sheet 6333**

- The new road from Snoul to Mondul Kiri was constructed by Samling Company , its code is changed from 5 to 3.
- The Samling road from Snoul to the junction to Keav Seima district was constructed on the existing road alignment.
- The road connection between O Reang to Mondul Kiri was constructed on the old alignment.
- The Bridge locations were added on the draft map. [ANNEX 6333](#)

**(6) Map sheet 6433**

- The road connected from Samling Road to Keav Seima district pass through O Reang district was changed the code no from 7 to 5.
- The new road connected from Samling road to O Reang district center was assigned the code no 5.
- The road connection from Mondul Kiri to Vietnam border was changed the code from 5 to 4.
- A new road (code no 4) was constructed a long Cambodia – Vietnam border which connected from Samling road.
- Add all the bridge locations. [ANNEX 6433](#)

**(7) Map sheet 6134**

Some roads in the western part of the Mekong River were changed the code no from 7 to 5. The mistake is mis-interpretation of aerial photograph.

In the real world, some bridges are under the big trees there for they could not be present on the aerial photo. [ANNEX 6134](#)

**(8) Map sheet 6135**

Through the field checking result it is noted that few roads was changed the code number, for example the road connection from Tansang village to Doung village, the code was changed from 6 to 7. In addition, some food path in the field crops was eliminated.

However, all the bridge locations are added because the bridge features was not clear defined due to photo interpretation process.

**7. Conclusion**

The result of field checking indicated that

- The code number of the roads that defined by interpretation of aerial photograph is not good enough to use as the final out put of the road data. It is needed to verify by field checking to correct the code number.
- The bridge locations are not presented on the map due to mis-interpretation of aerial photograph. The coordinate of bridge locations were collected from the field using hand GPS to correct and update the data.

In conclusion, the field checking of each map sheet is very important. It leads to improve the data quality of GIS BASE DATA as well as the raw data for compiling the topographic map. There for, the field checking activity should be supported for all the study area of the project.

## 8. ANNEX

### (1) SHEET 6232

#### Site 1

**Map sheet: 6232, Road Code: 4, X: 611169 Y: 1302595**

Map sheet: 6232

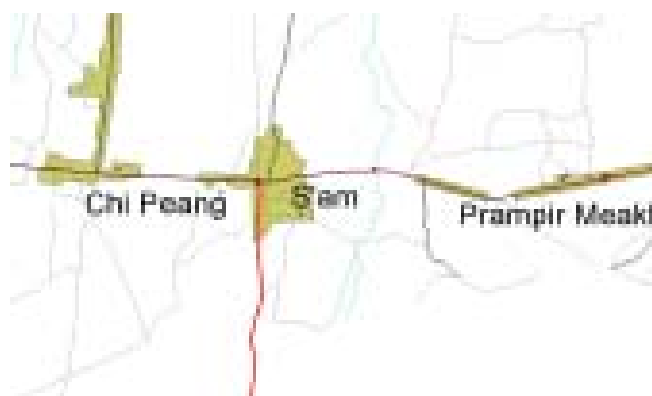
Road Code: 4

Location UTM of sample photo

X: 611169 Y: 1302595

The road is connected from S'am village to Vietnam border (the red color line)

Location map:



**Site 2**

**Map sheet: 6232, Road Code: 5, X: 622454, Y: 1304561**

Map sheet: 6232

Road Code: 5

Location UTM of sample photo

X: 622454 Y: 1304561

The road is connected from Samaong Tboung village to Bangkov village (the red color line)

Location map:



**Site 3**      **Map sheet: 6232, Road Code: 4, X: 627977   Y: 1307532X: 627977**  
**Y: 1307532**

Map sheet: 6232

Road Code: 4

Location UTM of sample photo

X: 627977      Y: 1307532

The road is connected between national road to the main road to Doun Rath village (the red color line)

Location map:



**Site 4**

**Map sheet: 6232, Road Code: 5,**

**X: 629112**

**Y: 1308341**

Map sheet: 6232

Road Code: 5

Location UTM of sample photo

X: 629112

Y: 1308341

The road is connected between Memot the new road (Samligh road, the red color line)

Location map:



## Site 5

**Map sheet: 6232, Road Code: 4, X: 630373 Y: 1306477**

Map sheet: 6232

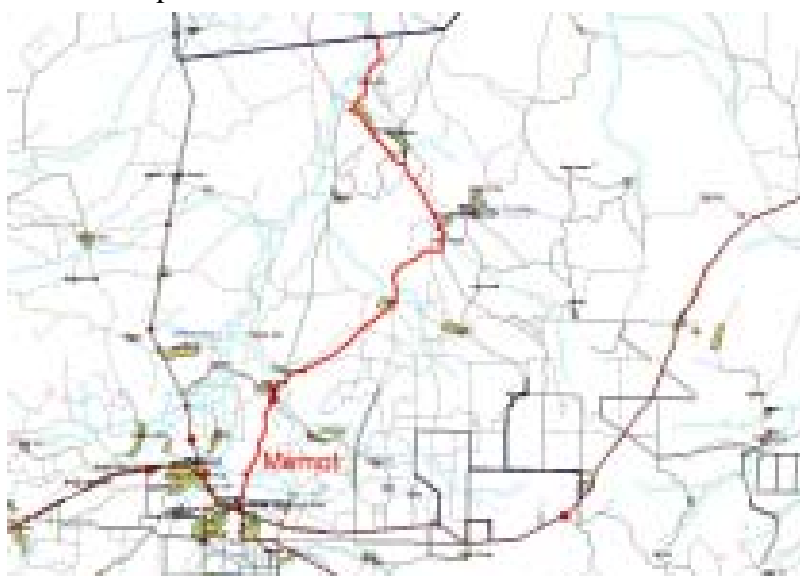
Road Code: 4

Location UTM of sample photo

X: 630373 Y: 1306477

The road is connected between Masin Tek village the new road (Samalign road, the red color line). This road used as access road from Memot to Snoul before the reconstruction of national road No7.

Location map:



**Site 6**

**Map sheet: 6232, Road Code: 6, X: 639095 Y: 1306300**

Map sheet: 6232

Road Code: 6

Location UTM of sample photo

X: 639095 Y: 1306300

The road is connected between national road to Robang Chroh village (the red color line).

Location map:



(2) SHEET 6235

Site 7

Map sheet: 6235, Road Code: 5, X: 620321 Y: 1470793

Map sheet: 6235

Road Code: 5

Location UTM of sample photo

X: 620321 Y: 1470793

The national road No 7 is connected between O Krieng to O Russey Kandal (the red color line).

Location map:



**Site 8**

**Map sheet: 6235, Road Code: 5, X: 622911**

**Y: 1486463**

Map sheet: 6235

Road Code: 5

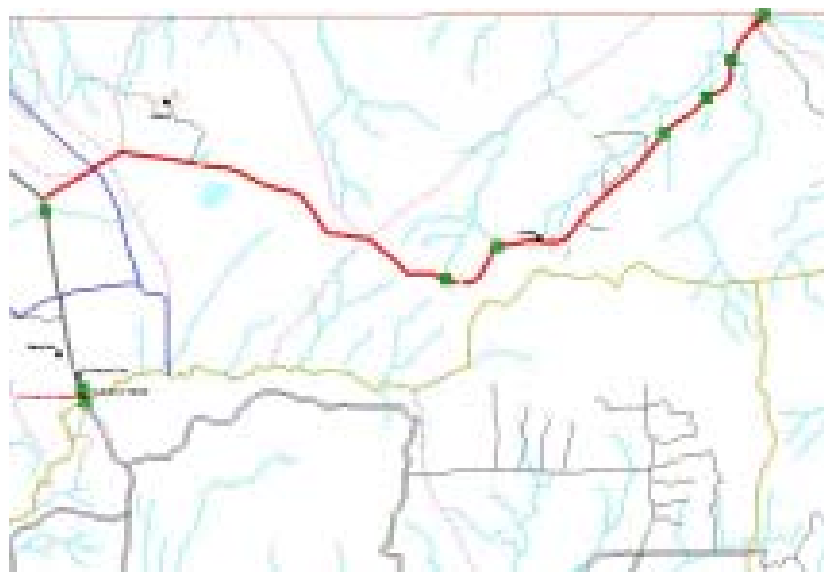
Location UTM of sample photo

X: 622911

Y: 1486463

The national road No 78 is connected between O Pongmaon to Tonle Sre Pok (the red color line).

Location map:



Site 9

Map sheet: 6235, Road Code: 5, X: 620693 Y: 1474025

Map sheet: 6235

Road Code: 5

Location UTM of sample photo

X: 620693 Y: 1474025

The road is connected between national road No7 to Modulkiri (the red color line).

Location map:



**Site 10**

**Map sheet: 6235, Name of bridge: Sre Pok, X: 646878 Y: 1492683**

Map sheet: 6235

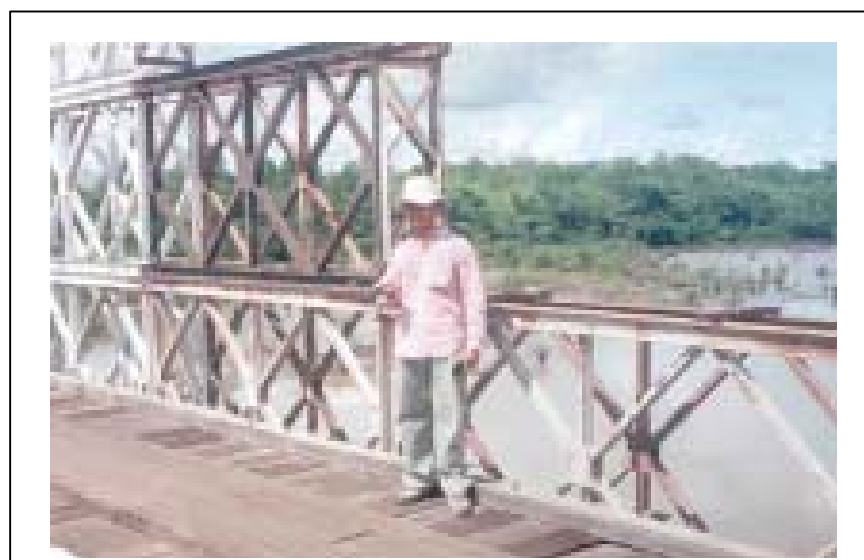
Name of bridge: Sre Pok

Location UTM of sample photo

X: 646878

Y: 1492683

Location map:



Site 11

Map sheet: 6235, Name of bridge: N/A, X: 645544

Y: 1490811

Map sheet: 6235

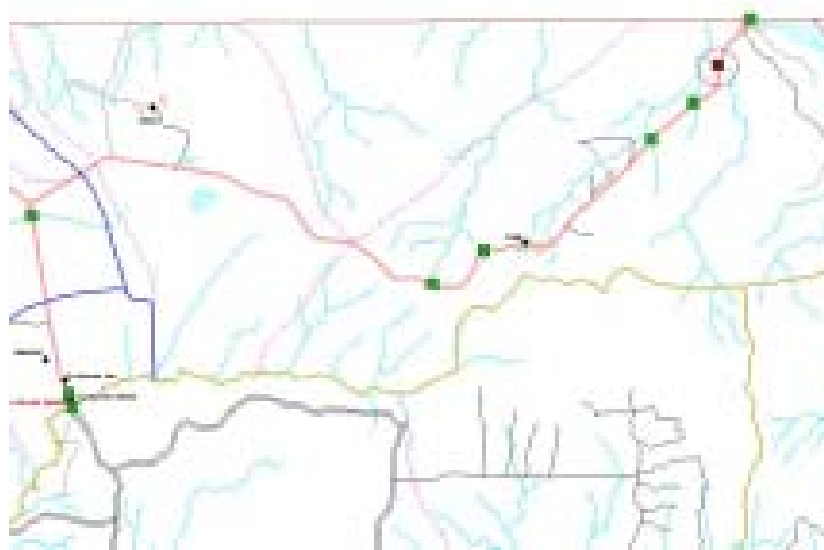
Name of bridge: N/A

Location UTM of sample photo

X: 645544

Y: 1490811

Location map:



**Site 12**      **Map sheet: 6235, Name of bridge: O Leang Krous, X: 633627, Y: 1481582**

Map sheet: 6235

Name of bridge: O Leang Krous

Location UTM of sample photo

X: 633627

Y: 1481582

Location map:



Site 13

Map sheet: 6235, Name of bridge: O Pongmaon, X: 616922 Y: 1484439

Map sheet: 6235

Name of bridge: O Pongmaon

Location UTM of sample photo

X: 616922

Y: 1484439

Location map:



**Site 14**

**Map sheet: 6235, Name of bridge: O Russey Kandal, X: 618592 Y: 1476398**

Map sheet: 6235

Name of bridge: O Russey Kandal

Location UTM of sample photo

X: 618592

Y: 1476398

Location map:



Site 15

Map sheet: 6235, Name of bridge: Kandeang, X: 621473 Y: 1465282

Map sheet: 6235

Name of bridge: Kandeang

Location UTM of sample photo

X: 621473 Y: 1465282

Location map:



**Site 16**      **Map sheet: 6235, Name of bridge: O Preah, X: 624565 Y: 1453874**

Map sheet: 6235

Name of bridge: O Preah

Location UTM of sample photo

X: 624565

Y: 1453874

Location map:



Site 17

Map sheet: 6235, Name of bridge: O Krieng, X: 628531 Y: 1441562

Map sheet: 6235

Name of bridge: O Krieng

Location UTM of sample photo

X: 628531

Y: 1441562

Location map:



**(3) SHEET 6333**

**Site 18**

**Map sheet: 6333, Road Code: 6, X: 671955 Y: 1339949**

Map sheet: 6333

Road Code: 6

Location UTM of sample photo

X: 671955 Y: 1339949

The connection from new road into the forest area (the red color line).

Location map:



**Site 19**

**Map sheet: 6333, Road Code: 6, X: 678668 Y: 1340204**

Map sheet: 6333

Road Code: 6

Location UTM of sample photo

X: 678668 Y: 1340204  
(the red color line).

Location map:



**Site 20**

**Map sheet: 6333, Road Code: 6, X: 673215 Y: 1339825**

Map sheet: 6333

Road Code: 6

Location UTM of sample photo

X: 673215 Y: 1339825  
(the red color line).

Location map:



## Site 21

**Map sheet: 6333, Road Code: 3, X: 699166 Y: 1338850**

Map sheet: 6333

Road Code: 3

Location UTM of sample photo

X: 699166 Y: 1338850

The road from Snoul to Mondul Kiri was constructed by Samling company (the red color line).

Location map:



**Site 22**

**Map sheet: 6333, Name of bridge: N/A, X: 664155 Y: 1335906**

Map sheet: 6333

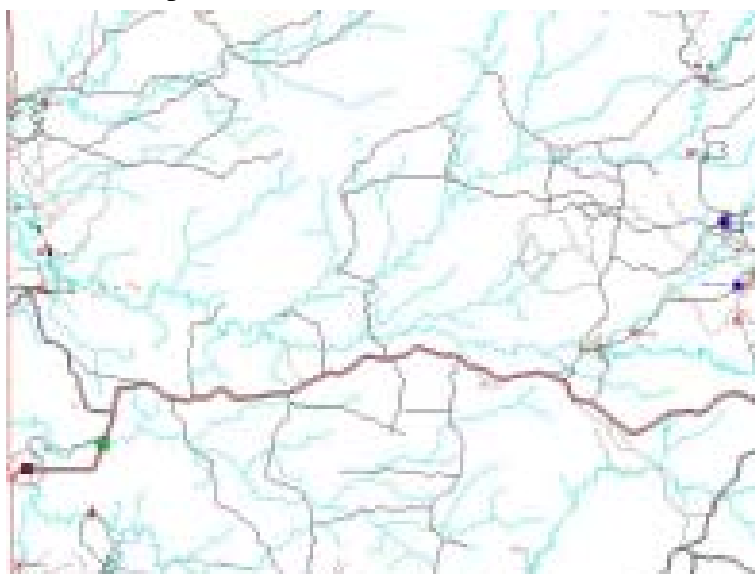
Name of bridge: N/A

Location UTM of sample photo

X: 664155

Y: 1335906

Location map:



Site 23

Map sheet: 6333, Name of bridge: N/A, X: 668324 Y: 1337366

Map sheet: 6333

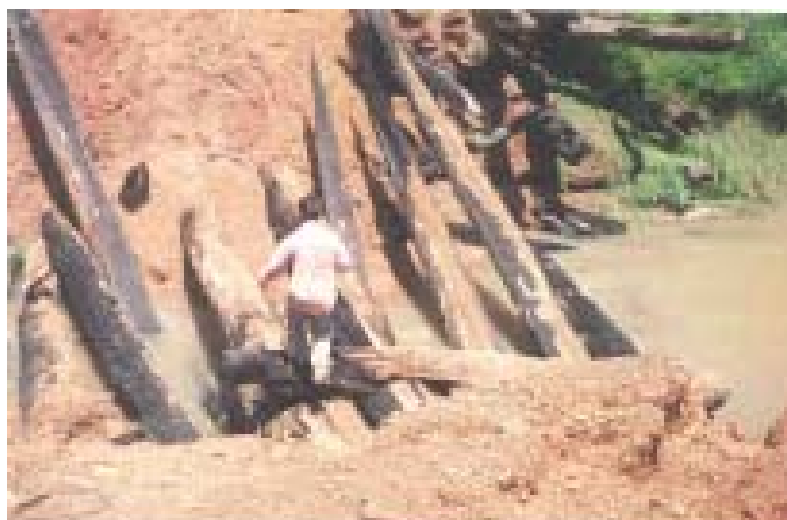
Name of bridge: N/A

Location UTM of sample photo

X: 668324

Y: 1337366

Location map:



**Site 24**

**Map sheet: 6333, Name of bridge: N/A, X: 708235 Y: 1341495**

Map sheet: 6333

Name of bridge: N/A

Location UTM of sample photo

X: 708235

Y: 1341495

Location map:



Map sheet: 6333

Location UTM of sample photo

X: 705158                      Y: 1347436

A map of the Kany Selma area. The map shows a network of roads and rivers. Key locations labeled include 'Kany Selma' in red, 'Kany 10' in green, 'Kany 11' in green, 'Kany 12' in green, 'Kany 13' in green, 'Kany 14' in green, 'Kany 15' in green, 'Kany 16' in green, 'Kany 17' in green, 'Kany 18' in green, 'Kany 19' in green, 'Kany 20' in green, 'Kany 21' in green, 'Kany 22' in green, 'Kany 23' in green, 'Kany 24' in green, 'Kany 25' in green, 'Kany 26' in green, 'Kany 27' in green, 'Kany 28' in green, 'Kany 29' in green, 'Kany 30' in green, 'Kany 31' in green, 'Kany 32' in green, 'Kany 33' in green, 'Kany 34' in green, 'Kany 35' in green, 'Kany 36' in green, 'Kany 37' in green, 'Kany 38' in green, 'Kany 39' in green, 'Kany 40' in green, 'Kany 41' in green, 'Kany 42' in green, 'Kany 43' in green, 'Kany 44' in green, 'Kany 45' in green, 'Kany 46' in green, 'Kany 47' in green, 'Kany 48' in green, 'Kany 49' in green, 'Kany 50' in green, 'Kany 51' in green, 'Kany 52' in green, 'Kany 53' in green, 'Kany 54' in green, 'Kany 55' in green, 'Kany 56' in green, 'Kany 57' in green, 'Kany 58' in green, 'Kany 59' in green, 'Kany 60' in green, 'Kany 61' in green, 'Kany 62' in green, 'Kany 63' in green, 'Kany 64' in green, 'Kany 65' in green, 'Kany 66' in green, 'Kany 67' in green, 'Kany 68' in green, 'Kany 69' in green, 'Kany 70' in green, 'Kany 71' in green, 'Kany 72' in green, 'Kany 73' in green, 'Kany 74' in green, 'Kany 75' in green, 'Kany 76' in green, 'Kany 77' in green, 'Kany 78' in green, 'Kany 79' in green, 'Kany 80' in green, 'Kany 81' in green, 'Kany 82' in green, 'Kany 83' in green, 'Kany 84' in green, 'Kany 85' in green, 'Kany 86' in green, 'Kany 87' in green, 'Kany 88' in green, 'Kany 89' in green, 'Kany 90' in green, 'Kany 91' in green, 'Kany 92' in green, 'Kany 93' in green, 'Kany 94' in green, 'Kany 95' in green, 'Kany 96' in green, 'Kany 97' in green, 'Kany 98' in green, 'Kany 99' in green, 'Kany 100' in green. The map also shows a river flowing through the area and several smaller roads connecting the main roads.



**(4) SHEET 6433**

**Site 26**

**Map sheet: 6433, Road Code: 5, X: 728622 Y: 1362657**

Map sheet: 6433

Road Code: 5

Location UTM of sample photo

X: 728622 Y: 1362657

The road is connected from Samling road to Keav Seima district pass through O Reang district (the red color line).

Location map:



**Site 27**      **Map sheet: 6433, Road Code: 6, Location UTM of sample photo, X: 734280   Y: 1363520**

Map sheet: 6433

Road Code: 6

Location UTM of sample photo

X: 734280      Y: 1363520

(the red color line)

Location map:



**Site 28**

**Map sheet: 6433, Road Code: 5, X: 734632 Y: 1364169**

Map sheet: 6433

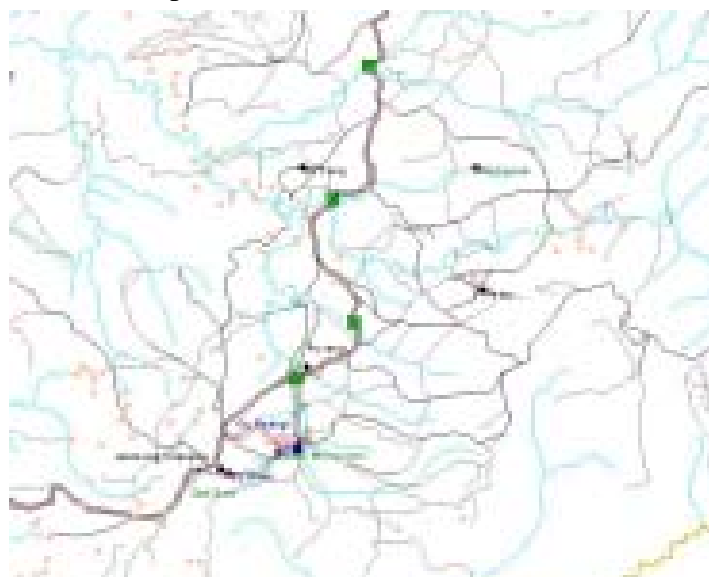
Road Code: 5

Location UTM of sample photo

X: 734632 Y: 1364169

The road is connected from Samling road to O Reang district center (the red color line).

Location map:



Site 29

Map sheet: 6433, Road Code: 4, 744118 Y: 1374958

Map sheet: 6433

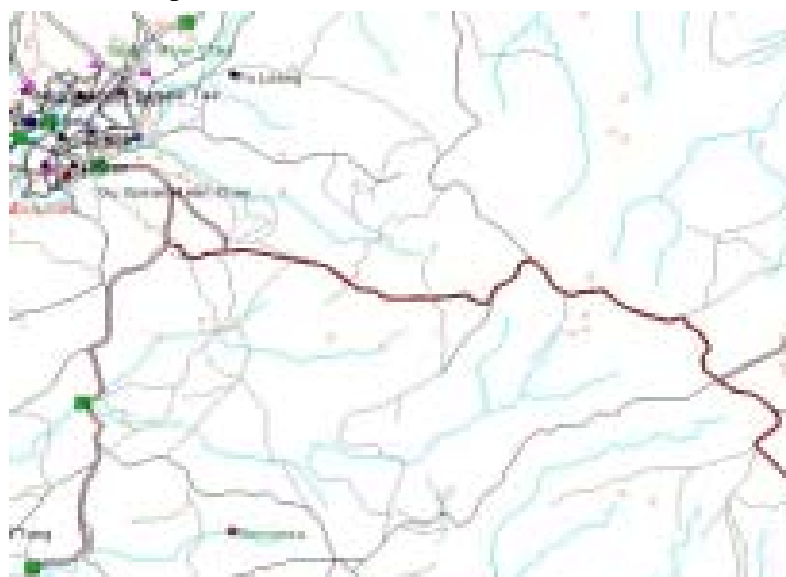
Road Code: 4

Location UTM of sample photo

X: 744118 Y: 1374958

The road is connected from Mondul Kiri to Vietnam border (the red color line).

Location map:



**Site 30**

**Map sheet: 6433, Road Code: 4, X: 739466**

**Y: 1377104**

Map sheet: 6433

Road Code: 4

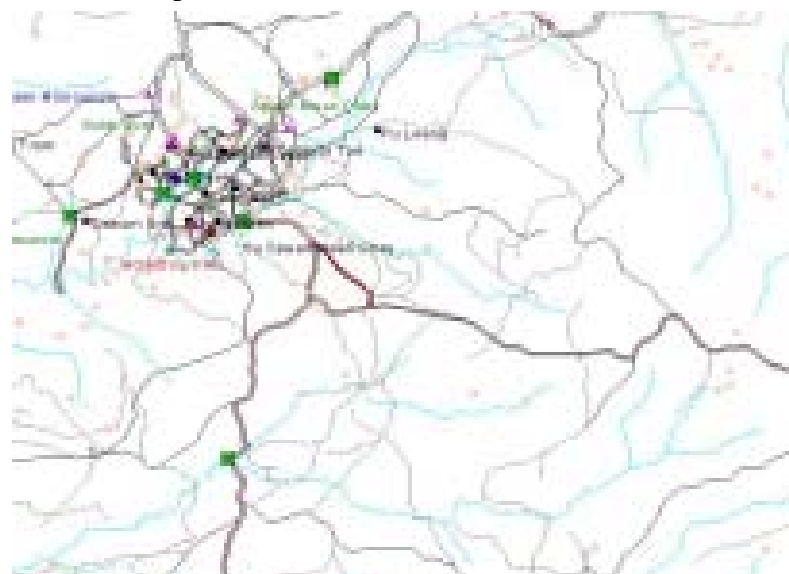
Location UTM of sample photo

X: 739466

Y: 1377104

(the red color line).

Location map:



Site 31

Map sheet: 6433, Road Code: 4, X: 735287 Y: 1376900

Map sheet: 6433

Road Code: 4

Location UTM of sample photo

X: 735287 Y: 1376900  
(the red color line).

Location map:



Site 32

Map sheet: 6433, Local Airfield, X: 737890 Y: 1378135

Map sheet: 6433

Local Airfield

Location UTM of sample photo

X: 737890

Y: 1378135

Location map:



Site 33

Map sheet: 6433, Name of bridge: N/A , X: 737233 Y: 1369832

Map sheet: 6433

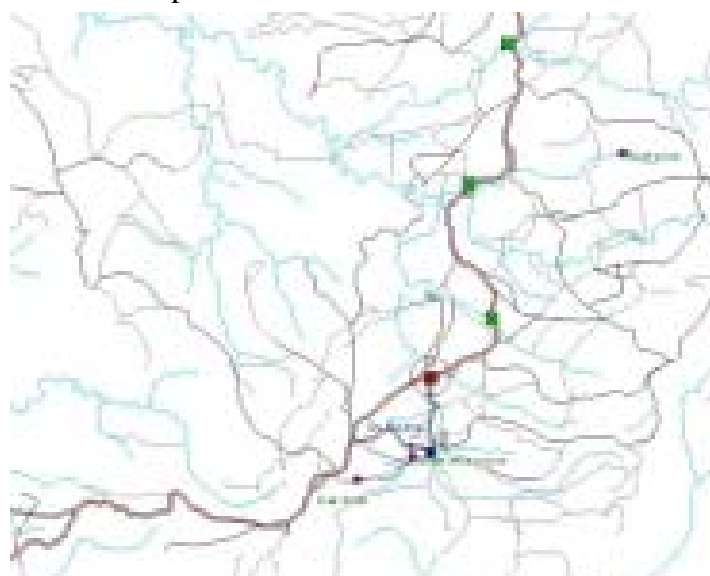
Name of bridge: N/A

Location UTM of sample photo

X: 737233

Y: 1369832

Location map:



**Site 34**

**Map sheet: 6433, Name of bridge: N/A , X: 737734 Y: 1366865**

Map sheet: 6433

Name of bridge: N/A

Location UTM of sample photo

X: 737734

Y: 1366865

Location map:



Site 35

Map sheet: 6433, Name of bridge: N/A , X: 737233

Y: 1369832

Map sheet: 6433

Name of bridge: N/A

Location UTM of sample photo

X: 737233

Y: 1369832

Location map:



**Site 36**

**Map sheet: 6433, Name of bridge: N/A , X: 738071 Y: 1372932**

Map sheet: 6433

Name of bridge: N/A

Location UTM of sample photo

X: 738071

Y: 1372932

Location map:



Site 37

Map sheet: 6433, Name of bridge: N/A , X: 738282

Y: 1377417

Map sheet: 6433

Name of bridge: N/A

Location UTM of sample photo

X: 738282

Y: 1377417

Location map:



(5) SHEET 6134

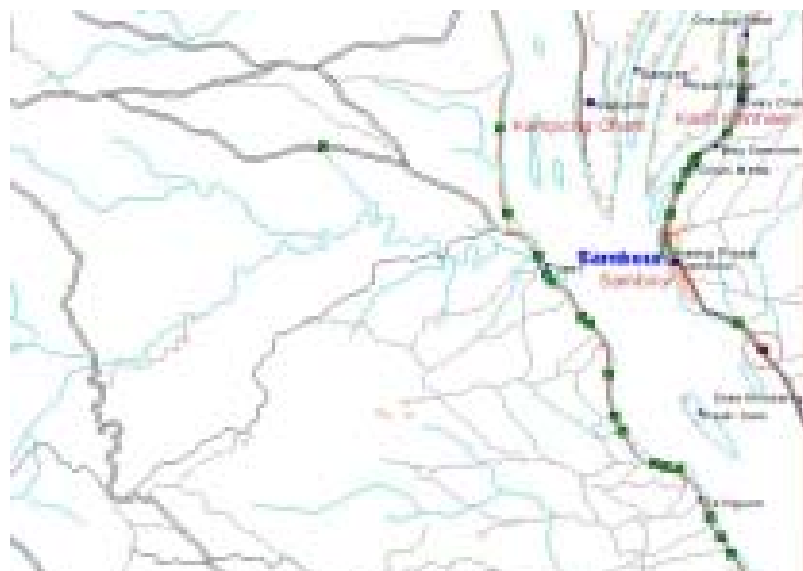
**Site 38**      **Map sheet: 6134, Name of bridge: N/A , X: 607491   Y: 1409264**

Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo  
X: 607491 Y: 1409264

Location map:



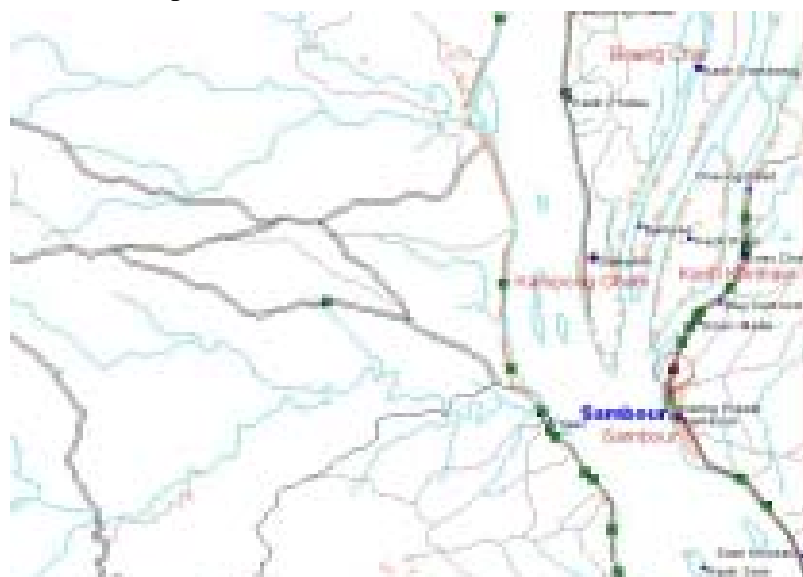
Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo

X: 605266                      Y: 1412687

Location map:



**Site 40**

**Map sheet: 6134, Name of bridge: N/A , X: 602696 Y: 1419655**

Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo

X: 602696 Y: 1419655

Location map:



Site 41

Map sheet: 6134, Name of bridge: N/A , X: 604073 Y: 1423628

Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo

X: 604073

Y: 1423628

Location map:



Site 42

Map sheet: 6134, Name of bridge: N/A, X: 601132 Y: 1421519

Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo

X: 601132

Y: 1421519

Location map:



Site 43

Map sheet: 6134, Name of bridge: N/A, X: 602159 Y: 1411623

Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo

X: 602159

Y: 1411623

Location map:



**Site 44**

**Map sheet: 6134, Name of bridge: N/A, X: 606218 Y: 1405072**

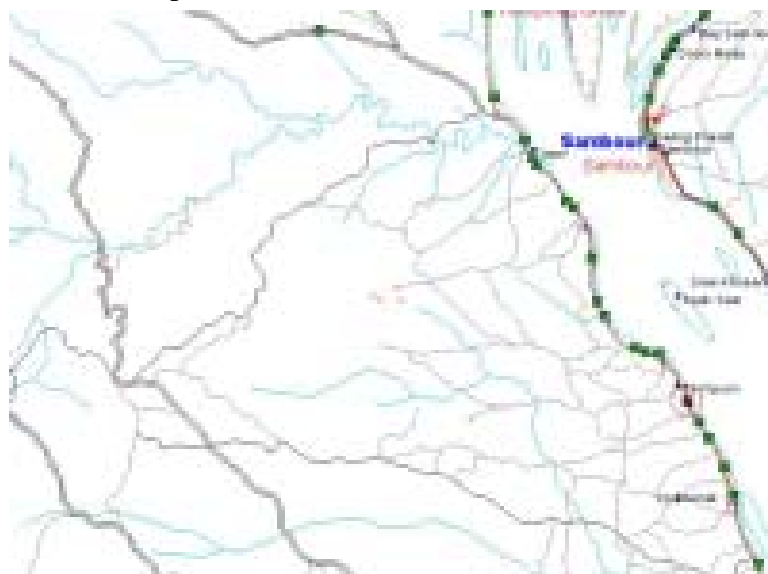
Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo

X: 606218 Y: 1405072

Location map:



Site 45

Map sheet: 6134, Name of bridge: N/A, X: 607982 Y: 1400995

Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo

X: 607982 Y: 1400995

Location map:



**Site 46**

**Map sheet: 6134, Name of bridge: N/A, X: 608312 Y: 1393737**

Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo

X: 608312 Y: 1393737

Location map:



Site 47

Map sheet: 6134, Name of bridge: N/A, X: 606816 Y: 1383592

Map sheet: 6134

Name of bridge: N/A

Location UTM of sample photo

X: 606816

Y: 1383592

Location map:



**Site 48**

**Map sheet: 6134, Road Code: 4, X: 604429**

**Y: 1427340**

Map sheet: 6134

Road Code: 4

Location UTM of sample photo

X: 604429

Y: 1427340

(the red color line).

Location map:



Site 49

Map sheet: 6134, Road Code: 5, X: 601378 Y: 1421884

Map sheet: 6134

Road Code: 5

Location UTM of sample photo

X: 601378 Y: 1421884  
(the red color line).

Location map:



**(6) SHEET 6135**

**Site 50**

**Map sheet: 6135, Name of bridge: N/A, X: 601780 Y: 1490287**

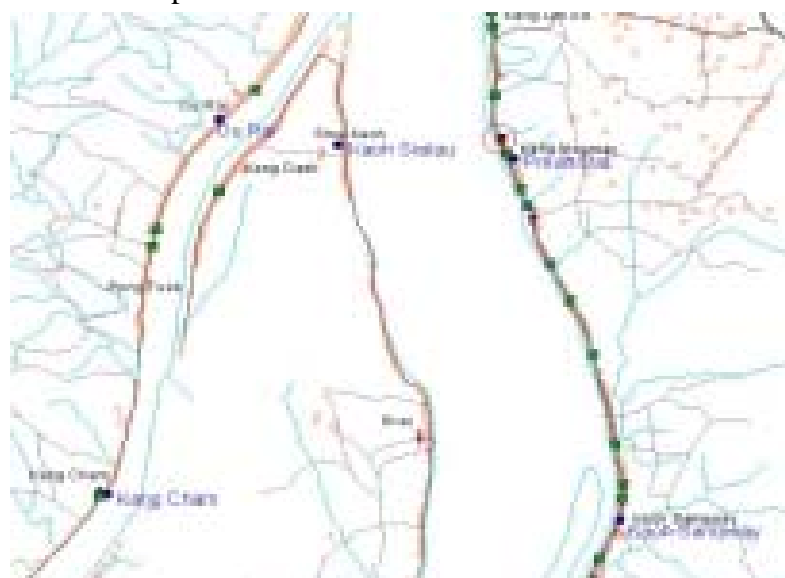
Map sheet: 6135

Name of bridge: N/A

Location UTM of sample photo

X: 601780 Y: 1490287

Location map:



## Site 51

**Map sheet: 6135, Name of bridge: N/A, X: 602771 Y: 1487784**

Map sheet: 6135

Name of bridge: N/A

Location UTM of sample photo

X: 602771

Y: 1487784

Location map:



Site 52

Map sheet: 6135, Name of bridge: N/A, X: 603400

Y: 1485654

Map sheet: 6135

Name of bridge: N/A

Location UTM of sample photo

X: 603400

Y: 1485654

Location map:



## Site 53

Map sheet: 6135, Name of bridge: N/A, X: 603156

Y: 1483820

Map sheet: 6135

Name of bridge: N/A

Location UTM of sample photo

X: 603156

Y: 1483820

Location map:



Site 54

Map sheet: 6135, Name of bridge: N/A, X: 602349

Y: 1482403

Map sheet: 6135

Name of bridge: N/A

Location UTM of sample photo

X: 602349

Y: 1482403

Location map:



Site 55

Map sheet: 6135, Name of bridge: N/A, X: 602212 Y: 1480067

Map sheet: 6135

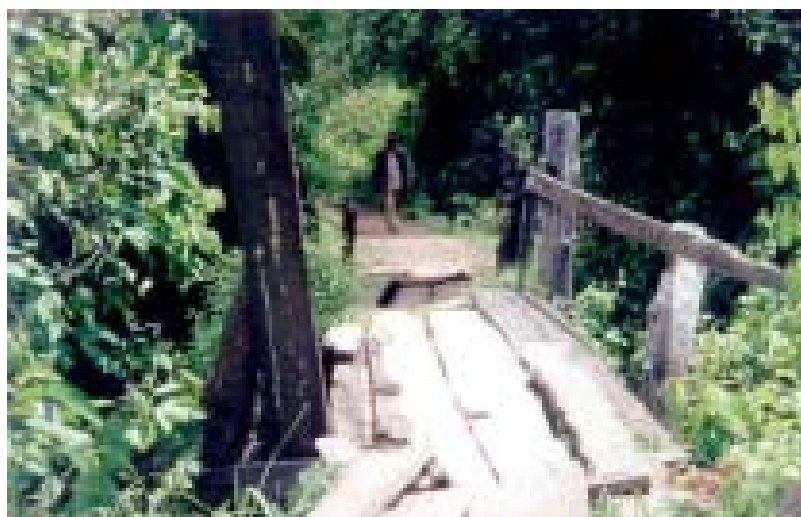
Name of bridge: N/A

Location UTM of sample photo

X: 602212

Y: 1480067

Location map:



**Site 56**

**Map sheet: 6135, Name of bridge: N/A, X: 603996 Y: 1477403**

Map sheet: 6135

Name of bridge: N/A

Location UTM of sample photo

X: 603996 Y: 1477403

Location map:



Site 57

Map sheet: 6135, Name of bridge: N/A, X: 596066 Y: 1484780

Map sheet: 6135

Name of bridge: N/A

Location UTM of sample photo

X: 596066

Y: 1484780

Location map:

