





**ROLE OF GIS**  
**IN**  
**ROAD CONSTRUCTION INDUSTRY**  
**WITH SPECIAL EMPHASIS ON**  
**BORDER ROADS ORGANISATION**

**Patience , Perseverance , Performance**

# BORDER ROADS ORGANISATION

## Role

- ✓ Develop & Maintain the Operational Road Infrastructure in the Border Areas.
- ✓ Contribute to the Socio-Economic Development of the Border States.

# SCOPE

- 1. PECULIARITIES OF ROAD CONSTRUCTION IN MOUNTAINS**
- 2. APPLICATION OF GIS**
  - **PLANNING**
  - **PROJECT MANAGEMENT**
  - **MAINT OF RECORDS DURING OPERATIONS**
- 3. OTHER IMPORTANT ISSUES**

# PECULIARITIES OF ROAD CONSTRUCTION IN MOUNTAINS

1. REMOTENESS.
2. SUB OPTIMAL UTILISATION OF VEHICLES / EQUIPMENT / PLANTS DUE TO WEATHER / TERRAIN.
3. PROBLEMS OF LOGISTIC SUPPORT
  - MAJOR CONSTRUCTION STORES
  - FUEL, OILS, LUBRICANTS
  - RATIONS
  - LABOUR
4. LONG MEAN TIME TO REPAIR (MTTR)

# APPLICATION OF GIS DURING PLANNING STAGE

## 1. RECONNAISSANCE OF ROADS

- ALIGNMENT
- GRADIENTS

## 2. SURVEY & ESTIMATING

- QUANTITIES OF FORMATION CUT / FILL ALONG THE ALIGNMENT
- HIGH ACCURACY DTED MAPS FOR LOWEST LEAST COUNT
- SATELLITE IMAGERY FOR STRATA IDENTIFICATION
- COMPATIBILITY WITH SOFTWARES LIKE ROAD MAX

# APPLICATION OF GIS IN RECONNAISSANCE



U.S. Dept of State Geographer



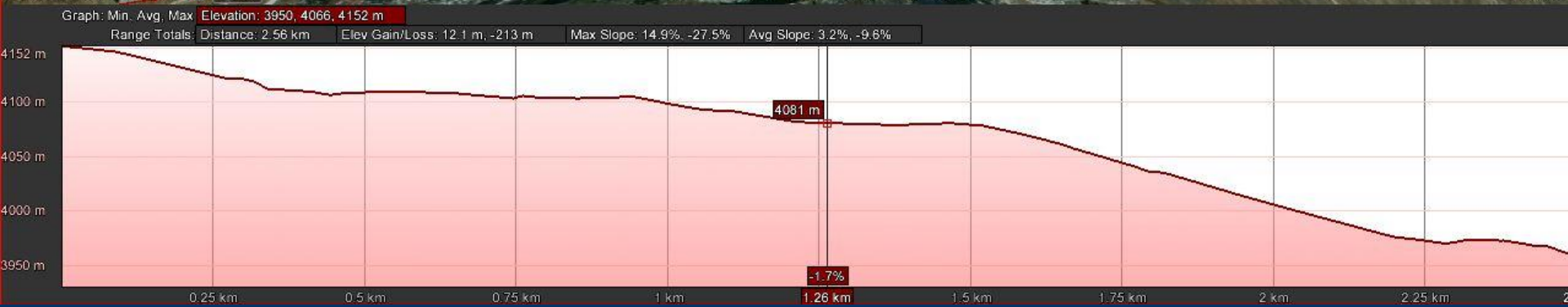
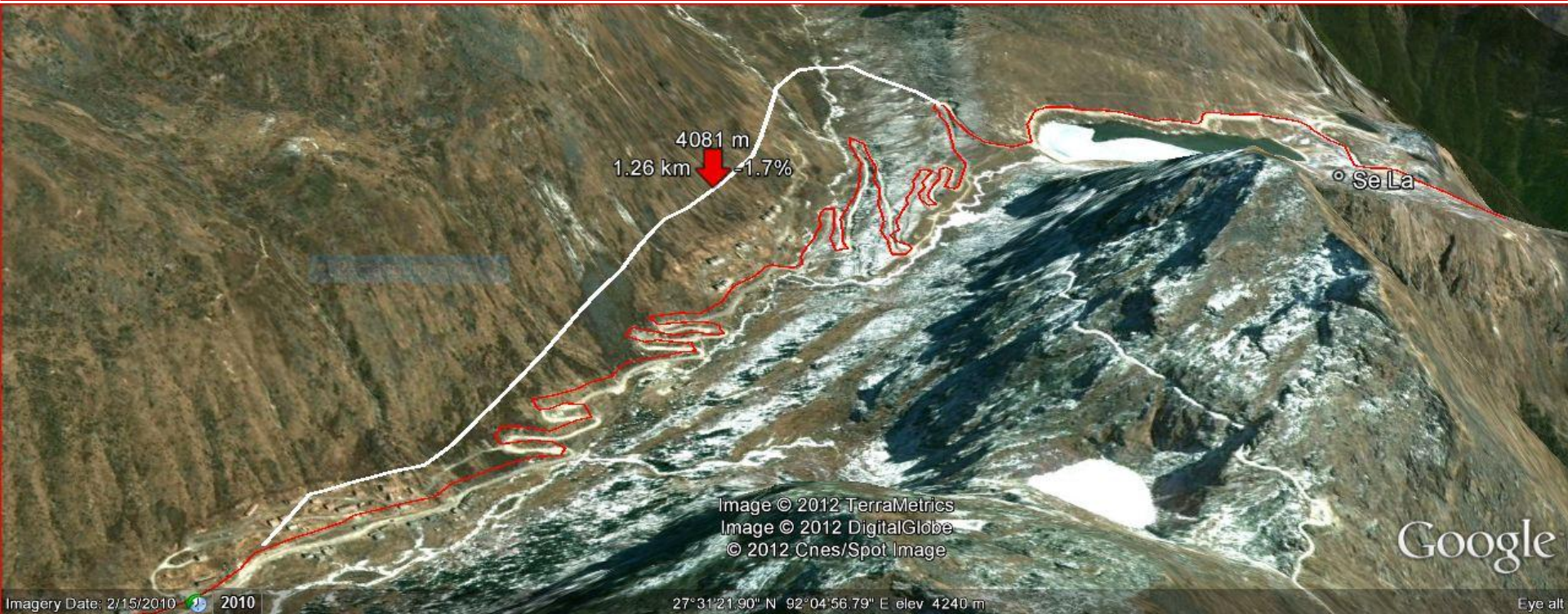
# APPLICATION OF GIS IN RECONNAISSANCE



PROPOSED REALIGNMENT  
OF ROAD TO AVOID THE ZIGS



# APPLICATION OF GIS IN RECONNAISSANCE



# APPLICATION OF GIS IN PLANNING

## 1. RECONNAISSANCE OF ROADS

- ALIGNMENT
- GRADIENTS

## 2. SURVEY & ESTIMATING

- QUANTITIES OF FORMATION CUT / FILL ALONG THE ALIGNMENT
- HIGH ACCURACY DTED MAPS WITH LOWEST LEAST COUNT
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- COMPATIBILITY WITH SOFTWARES LIKE ROAD MAX

# APPLICATION OF GIS IN PROJECT MANAGEMENT

1. OPTIMISE UTILISATION OF VEHICLES / EQUIPMENT / PLANTS
2. NEAR REAL TIME MONITORING OF PROGRESS OF WORKS
3. MONITOR AVAILABILITY & REQUIREMENT AT DETACHMENTS OF
  - MAJOR CONSTRUCTION STORES
  - FUEL, OILS, LUBRICANTS
  - RATIONS
  - LABOUR
4. REDUCE AVERAGE 'MEAN TIME TO REPAIR' BY MAINTAINING MINIMUM STOCK LEVEL OF FAST MOVING SPARES AT FORWARD DETACHMENTS

# MAINTENANCE OF RECORDS

## ROADS

- DESIGN
- REPAIRS
- RESURFACING

## LAND SLIDES

- LOCATIONS
- MAGNITUDE / VOLUME OF SLIDE
- TOTAL ROAD BLOCKAGE PERIOD
- RESOURCES REQUIRED TO CLEAR

## MET DATA

- RAIN FALL
- SNOW FALL

## BRIDGES

- DESIGN
- HYDRAULIC DATA
- HISTORY OF DISTRESS, REPAIRS

## SNOW CLEARANCE

- LOCATIONS
- AVALANCHE PRONE AREAS
- TOTAL ROAD BLOCKAGE PERIOD
- RESOURCES REQUIRED TO CLEAR

## TRAFFIC CENSUS

- QUANTUM OF TRAFFIC
- AXLE LOADS



# IMPORTANT ISSUES

- 1. CONNECTIVITY IN REMOTE AREAS**
- 2. TIERED ARCHITECTURE OF GIS FOR MONITORING AT RCC / TF / PROJECT HQ LEVEL**
- 3. EASE OF USE**
  - NON RIGID STRUCTURE**
  - MINIMUM TRAINING REQUIRED**

**THANK YOU**