Daffodil International University

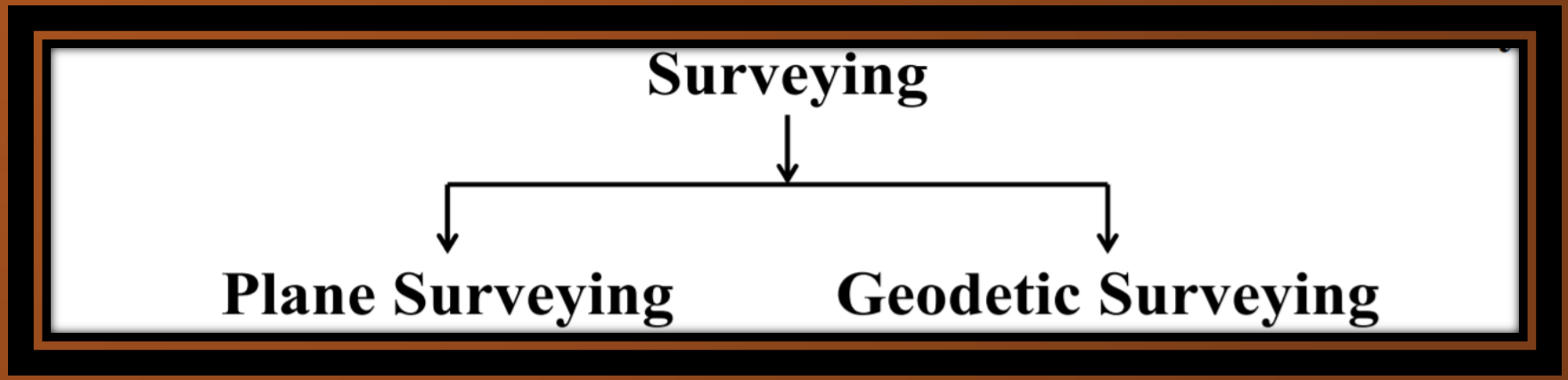
Topic:-Introduction of Survey

Presentation

- Surveying
- Plans Surveying
- Geodetic Surveying
- Plans and Map
- Map
- Topographical Map
- Cadastral Map
- Engineering Map
- Contour Map
- Military Map

What is surveying?

There are two major categories of surveying:



❑ Plane Surveying

- ✓ Plane surveying deals with areas of limited extent and it is assumed that the earth's surface is a plane and therefore no corrections necessary for the earth's curvature.

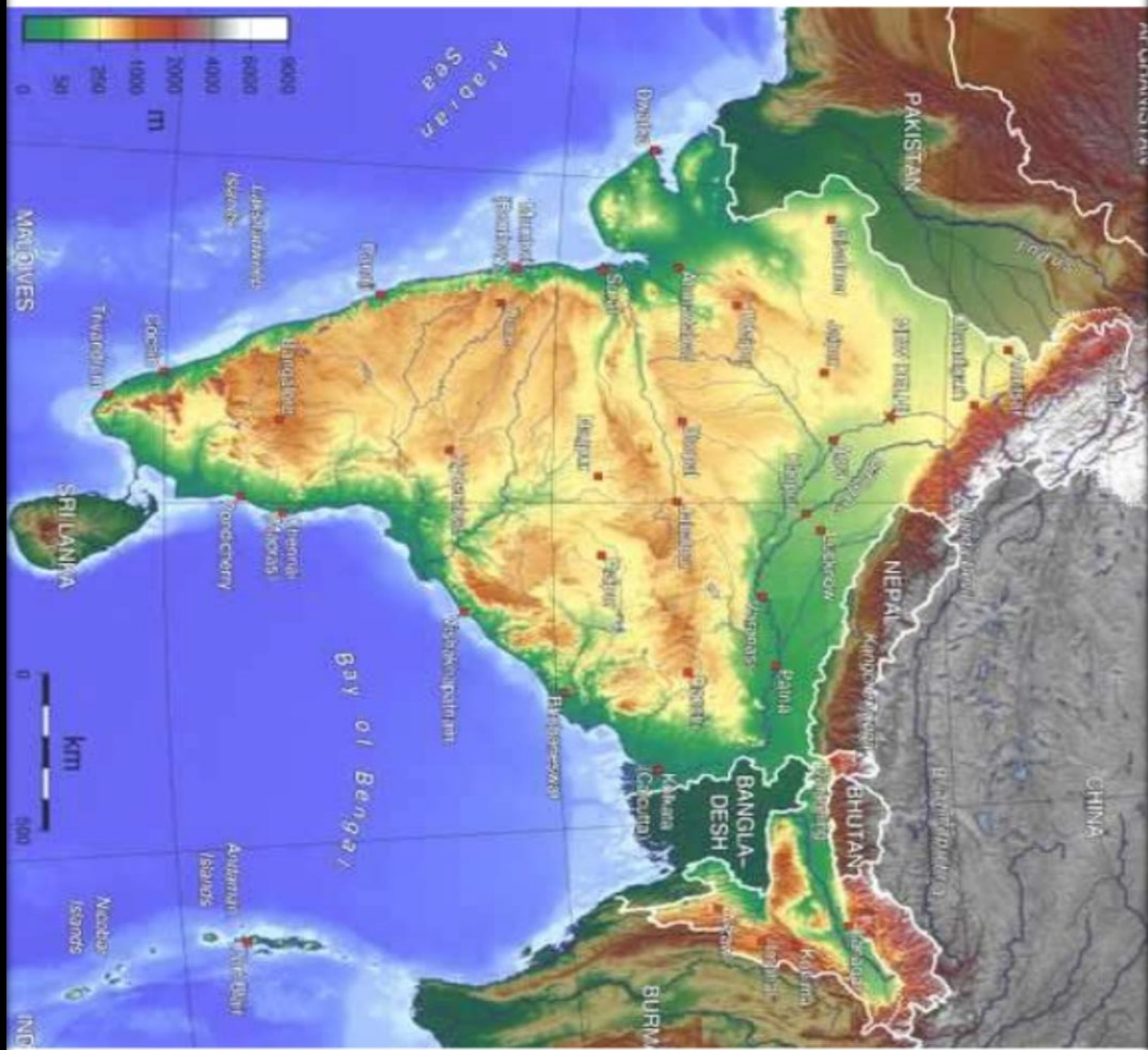
❑ Geodetic Surveying

- ✓ Geodetic surveying is concerned with determining the size and shape of the earth and it also provides a high-accuracy framework for the control of lowerorder surveys. The highest standards of accuracy are necessary. Geodetic surveys cover relatively large areas (eg a state or country) for which the effects of earth curvature must be considered

- **Plane Table Surveying?**

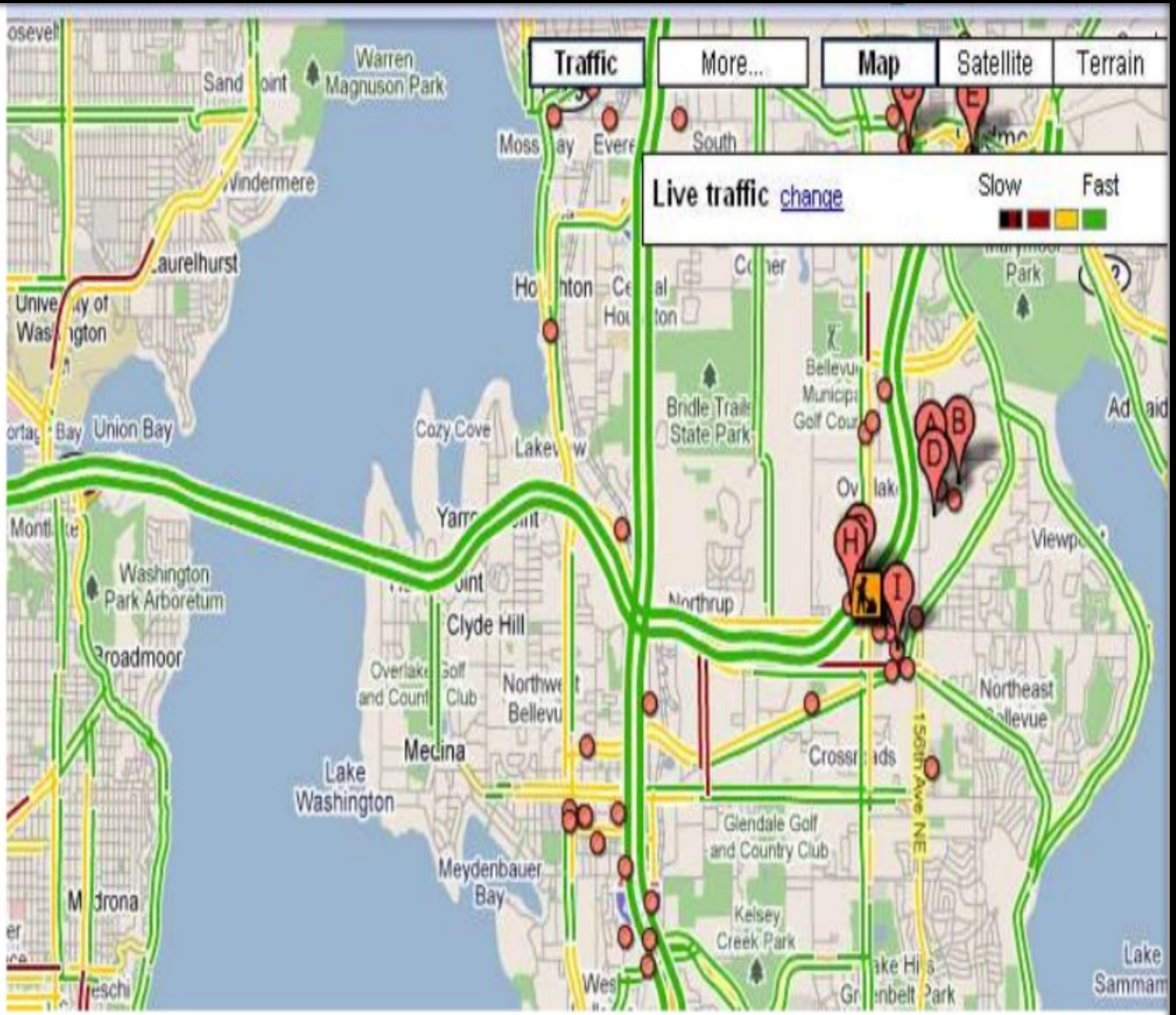
- **Plans and Map Surveying ?**

TOPOGRAPHICAL MAP

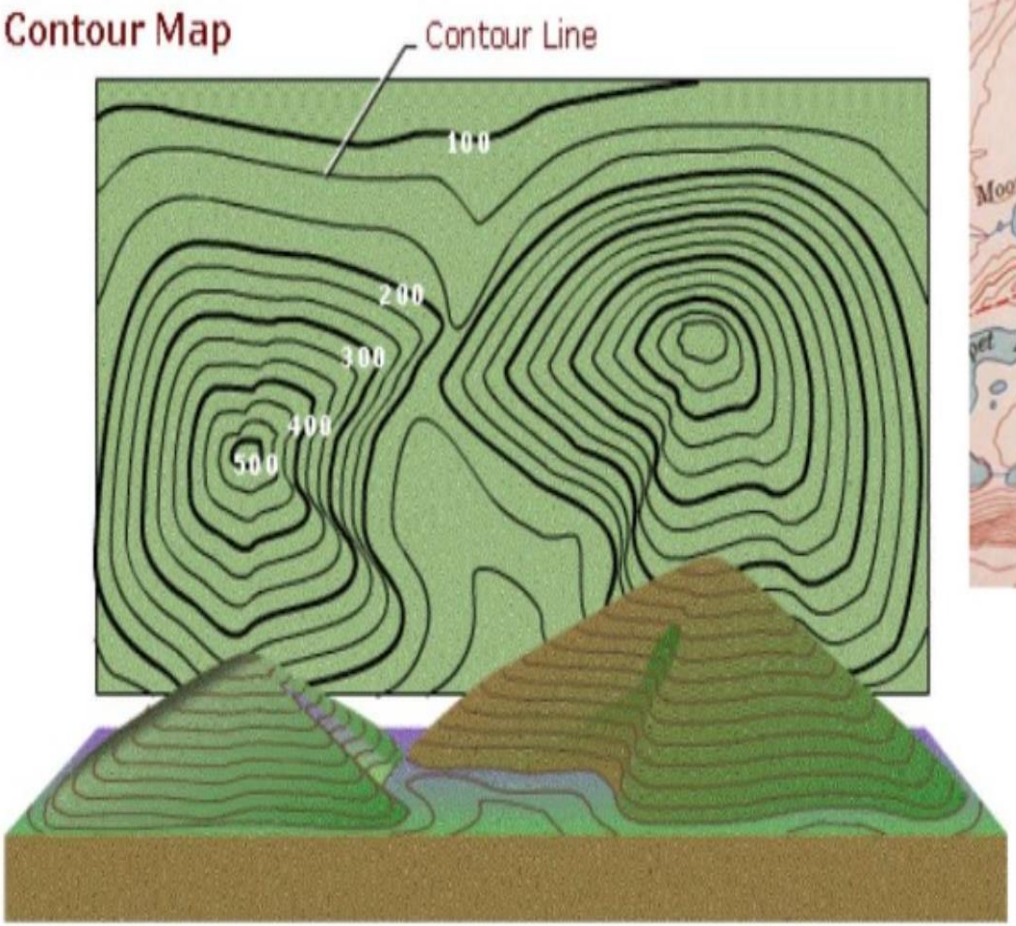


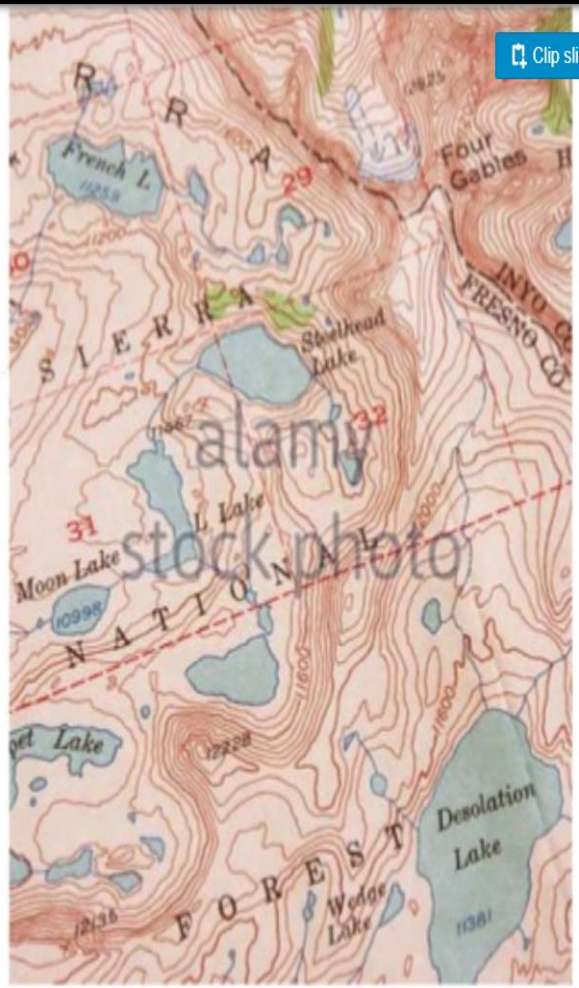
CADASTRAL MAP

ENGINEERING MAP

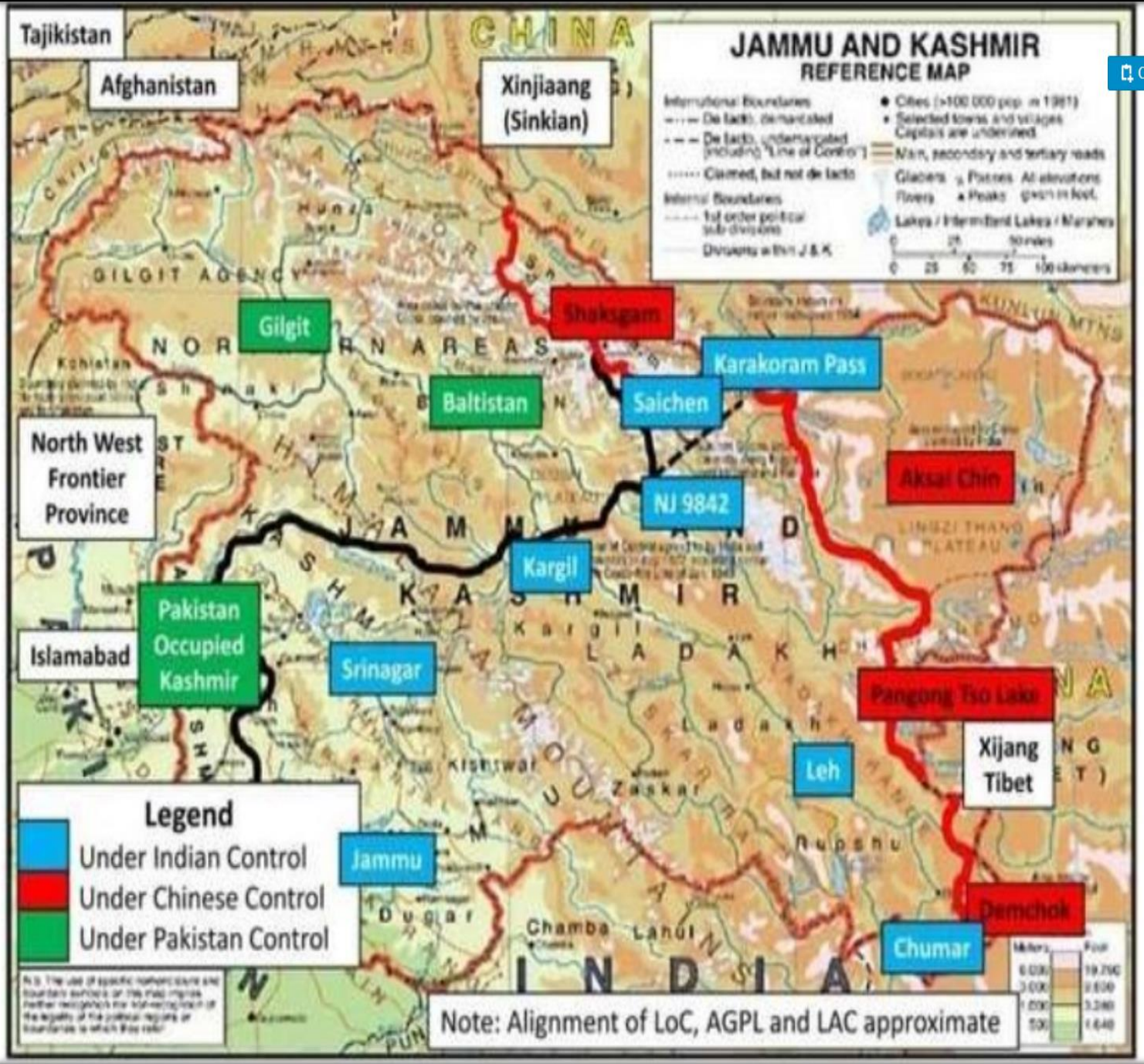


CONTOUR MAP


Contour Map
Contour Line
100
200
300
400
500


French L.
Four Gables
SIERRA
Steelhead Lake
INYO CO
FRESNO CO
Moon Lake
L Lake
NATIONAL
Desolation Lake
FOREST
Wedge Lake
alamy
stock photo

MILITARY MAP



Chain Correction

B. Chain Correction

1. Correction applied to incorrect length It is given by the expression

$$\text{True length of line (TL)} = \left(\frac{L'}{L}\right) \times \text{measured length (ML)}$$

where L = standard or true length of chain

L' = True length ± error

$= L \pm e$ (e = error in chain or tape, i.e. when it is too long or too short)

Use the positive sign when the chain or tape is too long, the negative sign when it is too short.

Chain Correction

2. Correction of incorrect area The correction to be applied in this case is given by the expression

$$\text{True area} = \left(\frac{L'}{L}\right)^2 \times \text{measured area}$$

3. Hypotenusal allowance This is explained in Sec. 1.15.

Hypotenusal allowance per tape = L (sec θ – 1)

where L = length of tape

θ = slope of the ground

This allowance is always added to the tape length.

Problems

Problem 1 The distance between two points, measured with a 20 m chain, was recorded as 327 m. It was afterwards found that the chain was 3 cm too long. What was the true distance between the points?

Solution Given data:

True length of chain, $L = 20$ m

Error in chain, $e = 3$ cm $= 0.03$ m, too long

$L' = L + e = 20 + 0.03 = 20.03$ m

Measured length = 327 m

$$\text{True length of line} = \frac{L'}{L} \times \text{ML}$$

$$= \frac{20.03}{20} \times 327 = 327.49 \text{ m}$$

Problems

Problem 2 The distance between two stations was 1,200 m when measured with a 20 m chain. The same distance when measured with 30 m chain was found to be 1,195 m. If the 20 m chain was 0.05 m too long, what was the error in the 30 m chain?

Solution Let us consider the 20 m chain.

$L = 20$ m $\qquad L' = 20 + 0.05 = 20.05$ m

Measured length = 1,200 m

$$\text{True length of line} = \frac{20.05}{20} \times 1{,}200 = 1{,}203 \text{ m}$$

Let us now consider the 30 m chain.

$L = 30$ m $\qquad L' = ?$

True length of line 1,203 m (as obtained from 20 m chain)
Measured length = 1,195 m.
From the relation

$$\text{TL} = \frac{L'}{L} \times \text{ML}$$

$$1{,}203 = \frac{L'}{30} \times 1{,}195$$

$$L' = \frac{1{,}203 \times 30}{1{,}195} = 30.20 \text{ m}$$

Now, L' is greater than L. So, the chain is too long.
Amount of error, $e = 30.20 - 30 = +0.20$ m

Problems

Problem 3 A line was measured by a 20 m chain which was accurate before starting the day's work. After chaining 900 m, the chain was found to be 6 cm too long. After chaining a total distance of 1,575 m, the chain was found to be 14 cm too long. Find the true distance of the line.

Solution First part:

$$L = 20 \text{ m}$$

$$L' = 20 + \frac{0 + 0.06}{2} \text{ (considering mean elongation)}$$

$$= 20.03 \text{ m}$$

$$\text{ML} = 900 \text{ m}$$

$$\text{TL} = ?$$

$$\text{TL} = \frac{L'}{L} \times \text{ML}$$

$$= \frac{20.03}{20} \times 900 = 901.35 \text{ m}$$

Second part:

$$L = 20 \text{ m}$$

$$L' = 20 + \frac{0.06 + 0.14}{2} = 20.1 \text{ m}$$

$$\text{ML} = 1{,}575 - 900 = 675 \text{ m}$$

$$\text{TL} = \frac{20.1}{20} \times 675 = 678.375 \text{ m}$$

True distance = 901.350 + 678.375 = 1,579.725 m


Thank you!