

## Leveling-Theory and Methods

**Leveling** is the process by which elevations of points or differences in elevation are determined.

### Areas of Application

- ◆ Design of highways, railroads, canals, etc.
- ◆ Layout construction projects according to specific design
- ◆ Calculate earthwork volumes
- ◆ Investigate drainage characteristics
- ◆ Develop maps showing general ground configurations
- ◆ Monitor earth subsidence

# Definitions

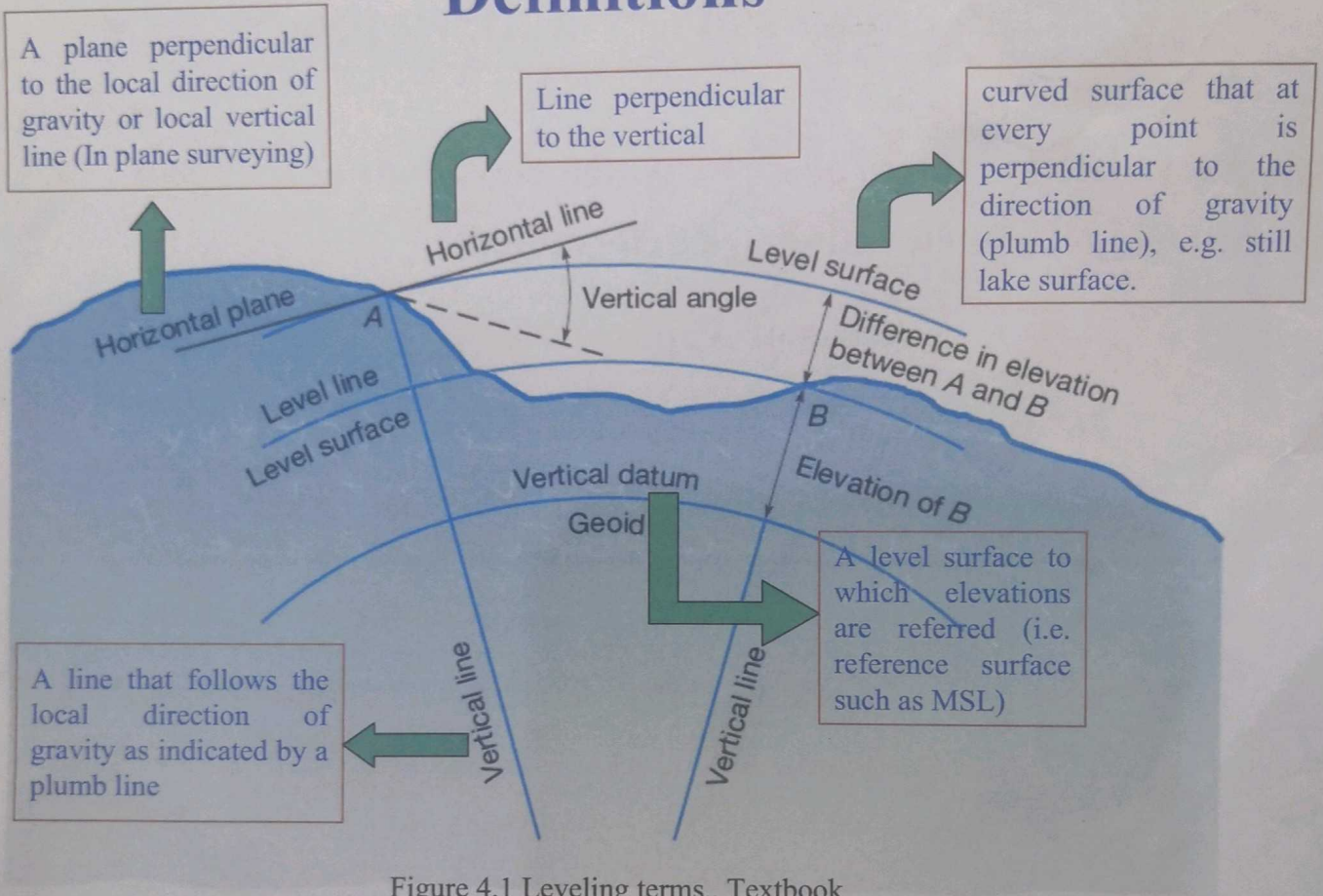


Figure 4.1 Leveling terms., Textbook

## Definitions ....

### **Mean Sea Level (MSL):**

Average elevation of the sea surface based on hourly tide gauge measurements over a period of 19 years

### **Bench Mark (BM):**

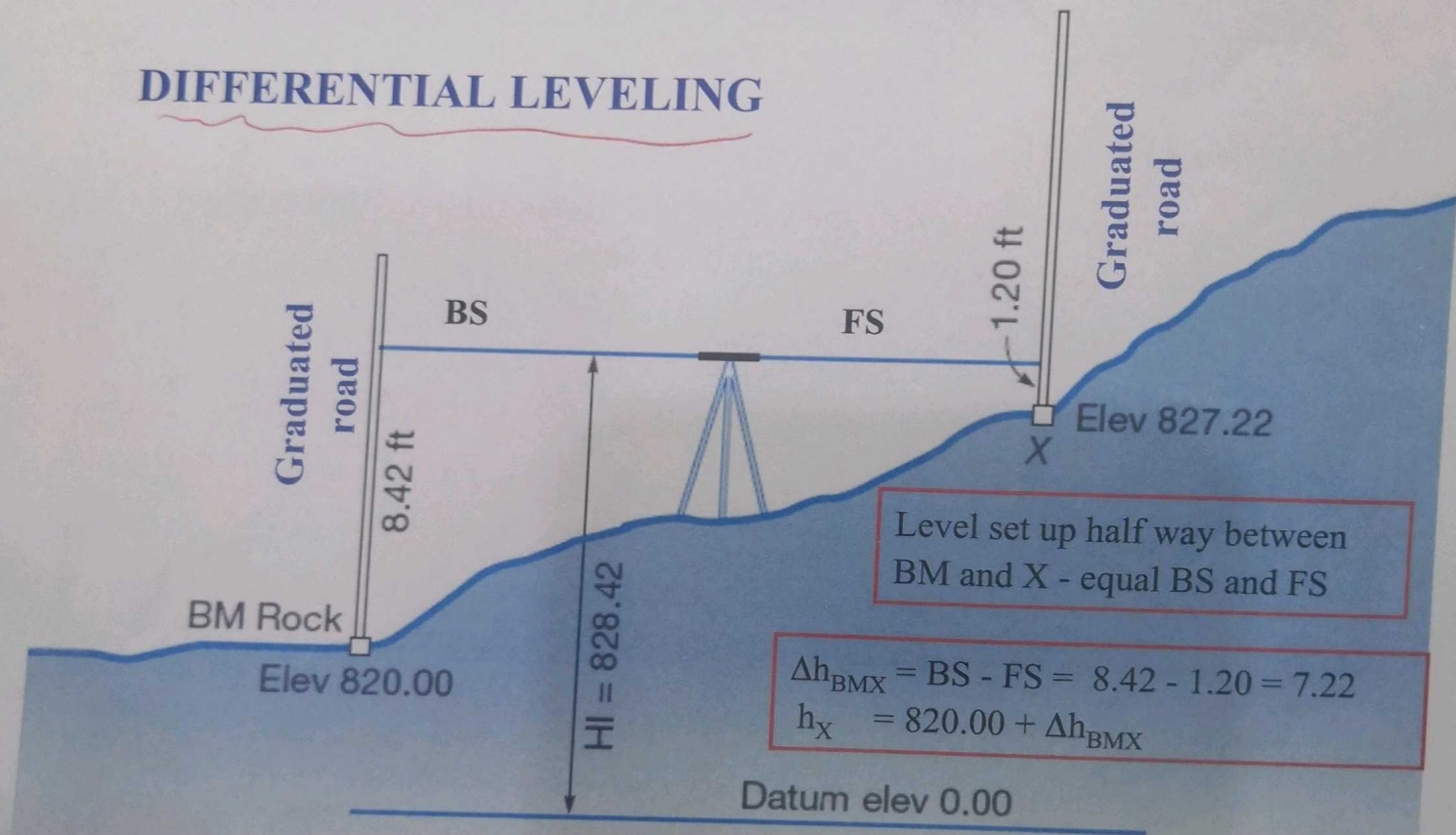
A permanent reference point with a known elevation (relative to some datum, usually MSL)

### **Vertical Control:**

A series of bench marks or other points of known elevation established throughout an area.

# LEVELING METHODS

## DIFFERENTIAL LEVELING



## EQUIPMENT FOR DIFFERENTIAL LEVELING

