

# DEQ Certification Class Presentations

**Class presentations are provided for study/review purposes only. Printouts of these PowerPoint slides will not be allowed into the exam testing centers.**

**July 2024**

# Module 4

## ESC Plan Components

# Module 4 Contents

4a. ESC Plan Elements

4b. Minimum Standards – *online course*

4c. Plan Reading Skills

# Module 4a.

## Erosion and Sediment Control Plan Elements

# ESC Plans

- Show how to develop the site and the phasing of construction
- Should be separate from the building construction drawings
- Consists of two parts:

Maintenance & Operations Facility Site Plan



# ESC Plans



- Narrative – written out project description
- Illustrative – shows the project development drawn out on map sheets

# Module 4b.

Minimum Standards - *Online Course*

# Minimum Standards - Groupings

- Erosion control and soil stabilization  
MS-1, 2, 3, 5



- Sediment control  
MS-4, 6



- Slope protection  
MS-7, 8, 9





# Minimum Standards - Groupings

- Channels, culverts, and outlets

MS-10, 11



- Watercourses

MS-12, 13, 14, 15



- Underground utilities

MS-16



# Minimum Standards - Groupings

- Construction entrances  
MS-17
- Project completion  
MS-18
- Water quantity  
stormwater management  
MS-19



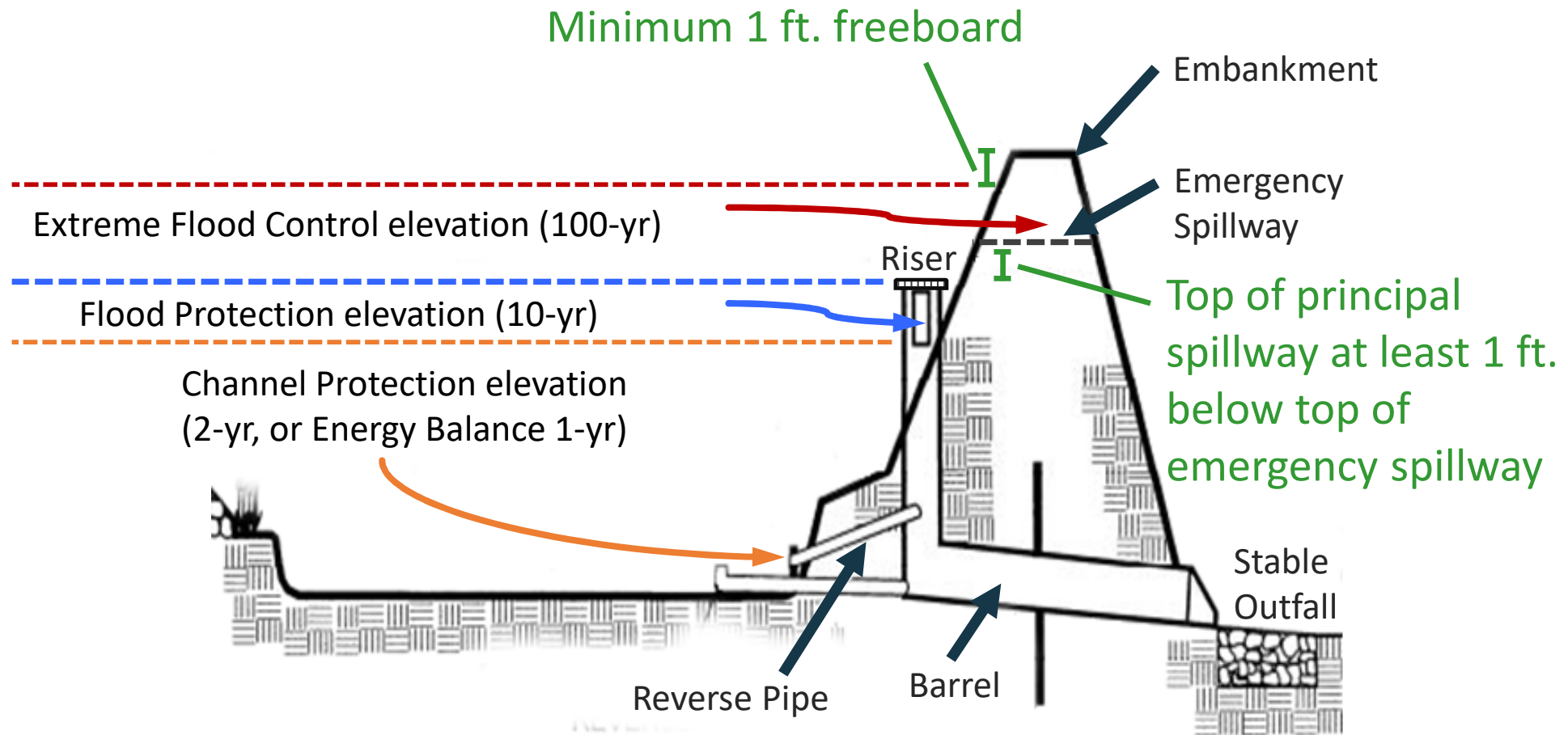
# MS-19

## Channel and Flood Protection

# As an Inspector

- Check for
  - Sheet flow becoming a problem
    - Erosion
    - Flooding
  - Outfall stability
  - Downstream areas showing evidence of erosion or flooding
- Bring any problems back to your plan reviewer

# Stormwater Management Pond Schematic (Profile)



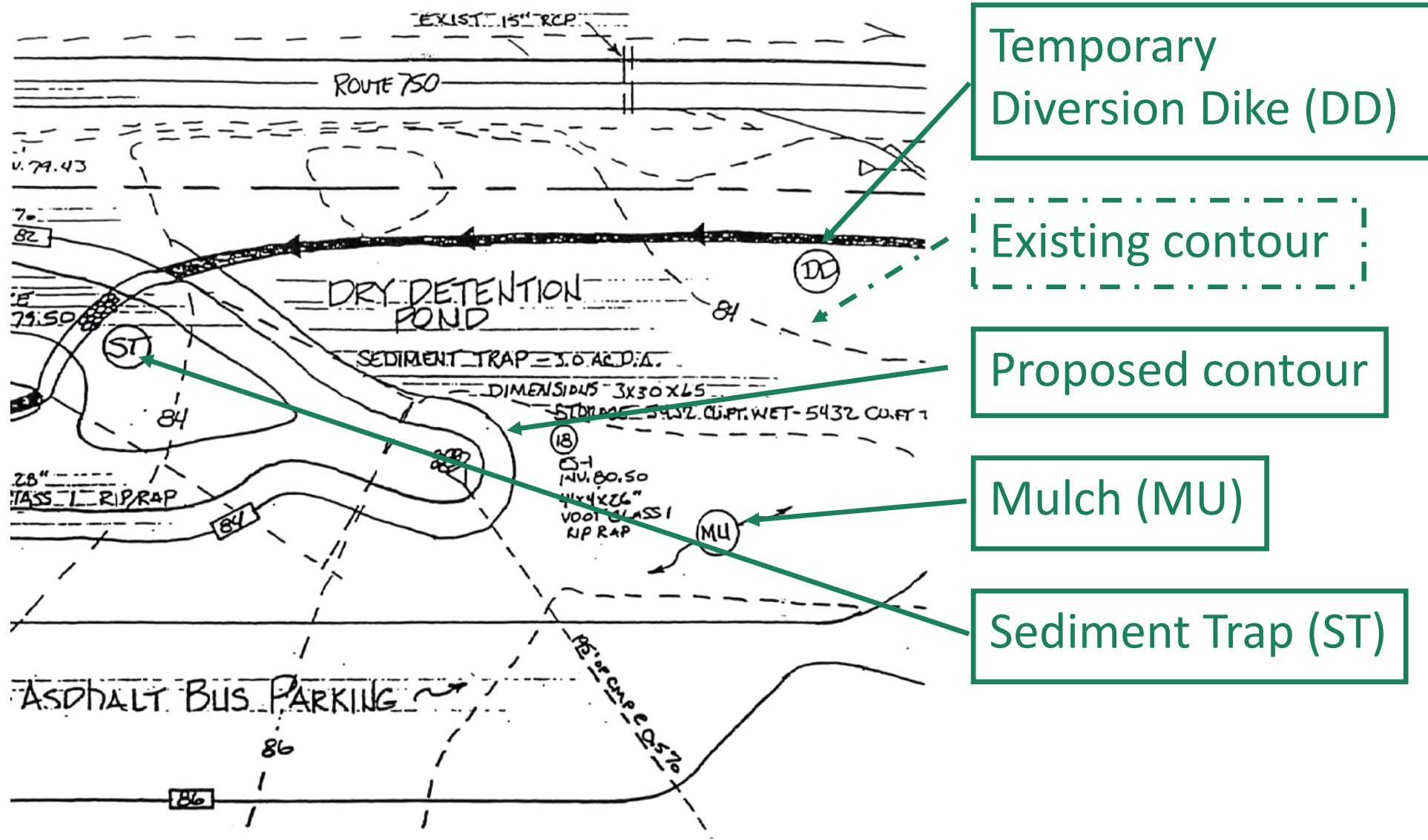
Water quantity compliance on approved plan/installed pond achieved via size of riser pipe, size of riser orifice(s), size of outflow pipes, and barrel size.  
**Pipe materials/specs should be verified in accordance with approved plan.**

# **Minimum Standards' Bingo!**

# Module 4c.

## Plan Reading Skills

# Illustrative Portion of ESC Plan





# QuickPoll

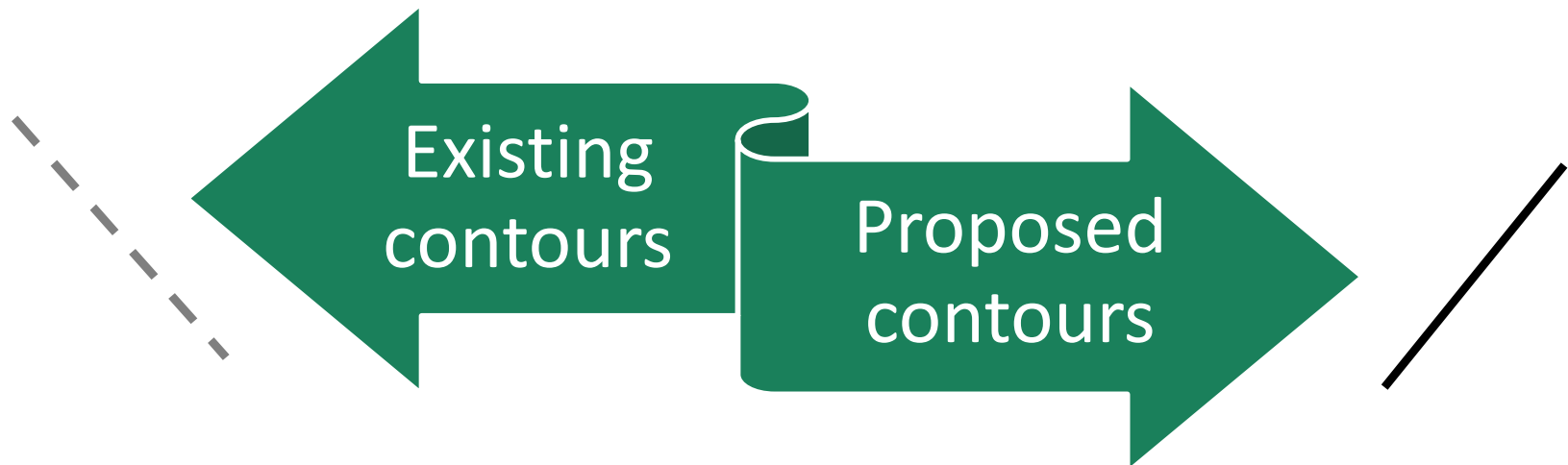
# QuickPoll

What is the most confusing aspect of reading plans?

- a. Envisaging what the plans are showing
- b. Cut vs. fill
- c. Ridge lines vs. swales
- d. Eyeing slopes and calculations
- e. It's all Greek to me!

# Reading Contour Lines

- Existing contours are usually shown as lighter gray or dashed lines
- Proposed contours are usually shown as solid black lines

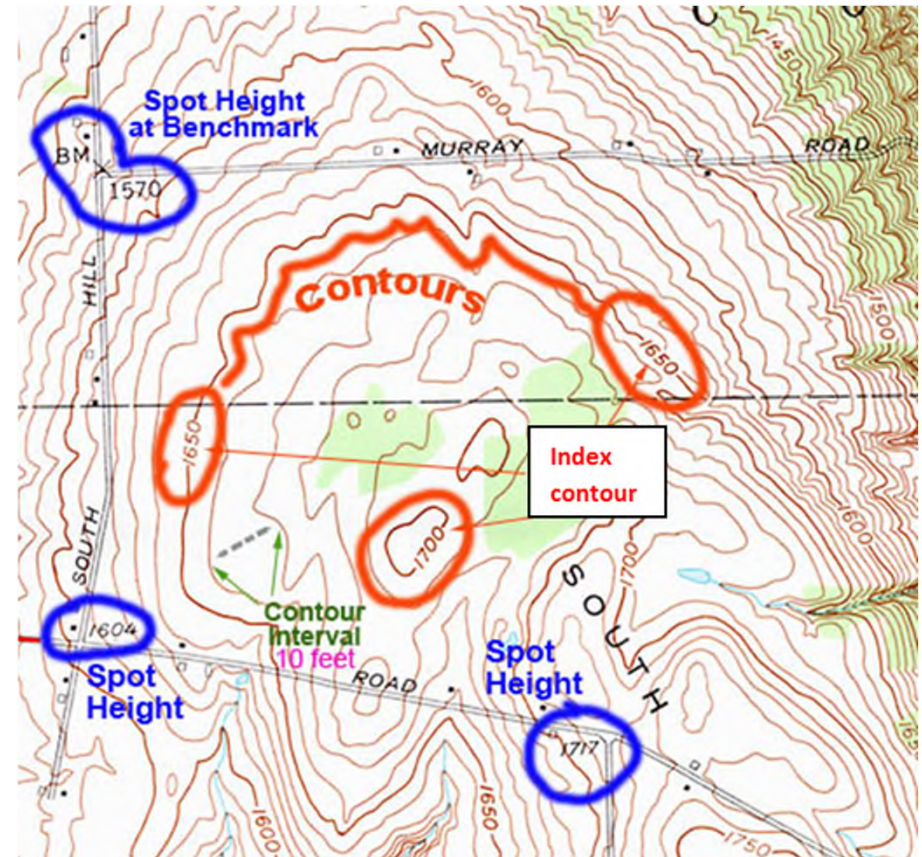


# Reading Contour Lines

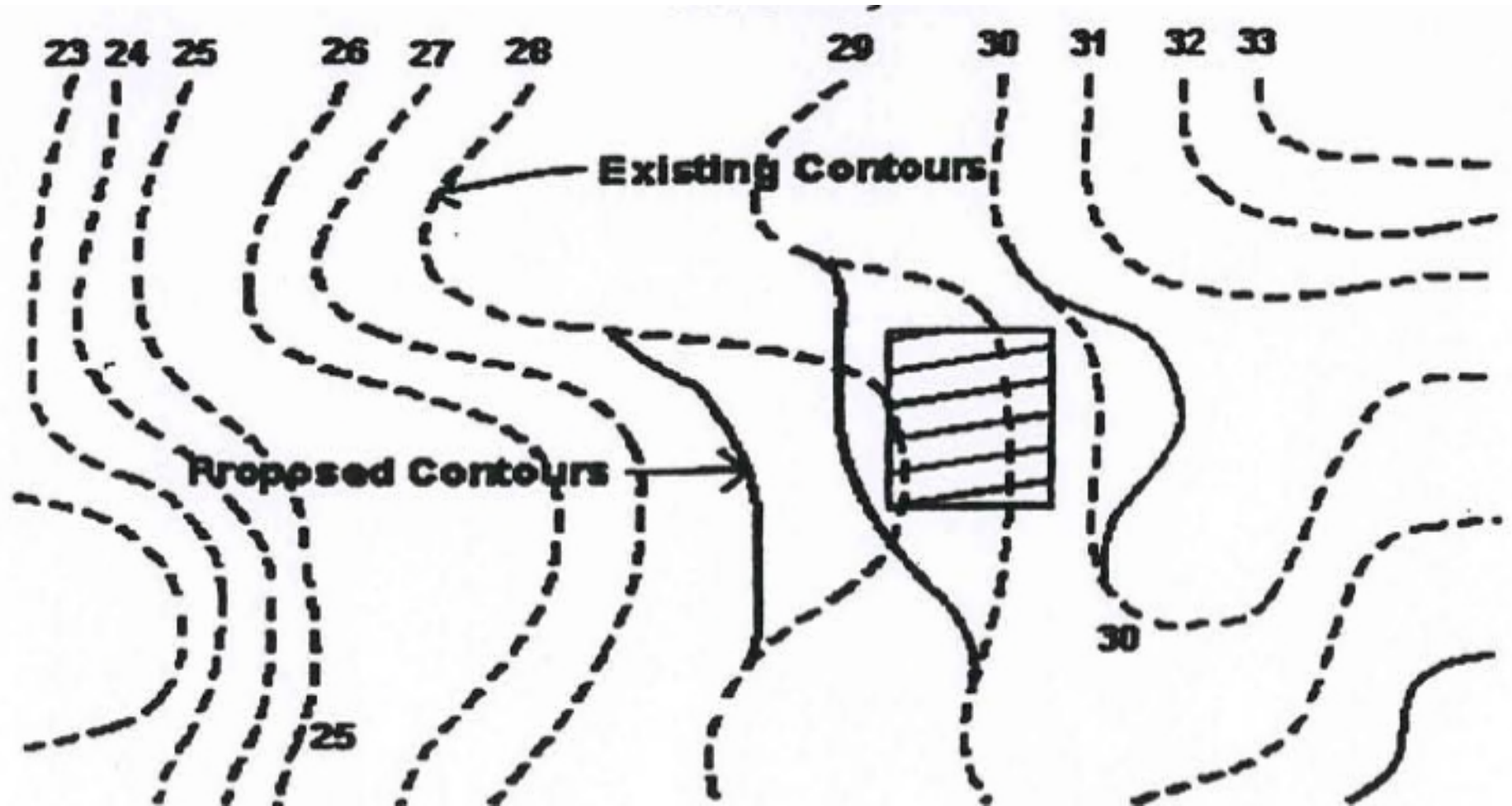
- **Contour line** – a line on a map connecting points of equal elevation (height relative to sea level)
- **Contour interval** – the difference in elevation between two adjacent contour lines
- **Index contour** – contour lines that are labeled to help you find the contour interval, usually bolded
- **Benchmark** – point of known elevation

# Reading Contour Lines

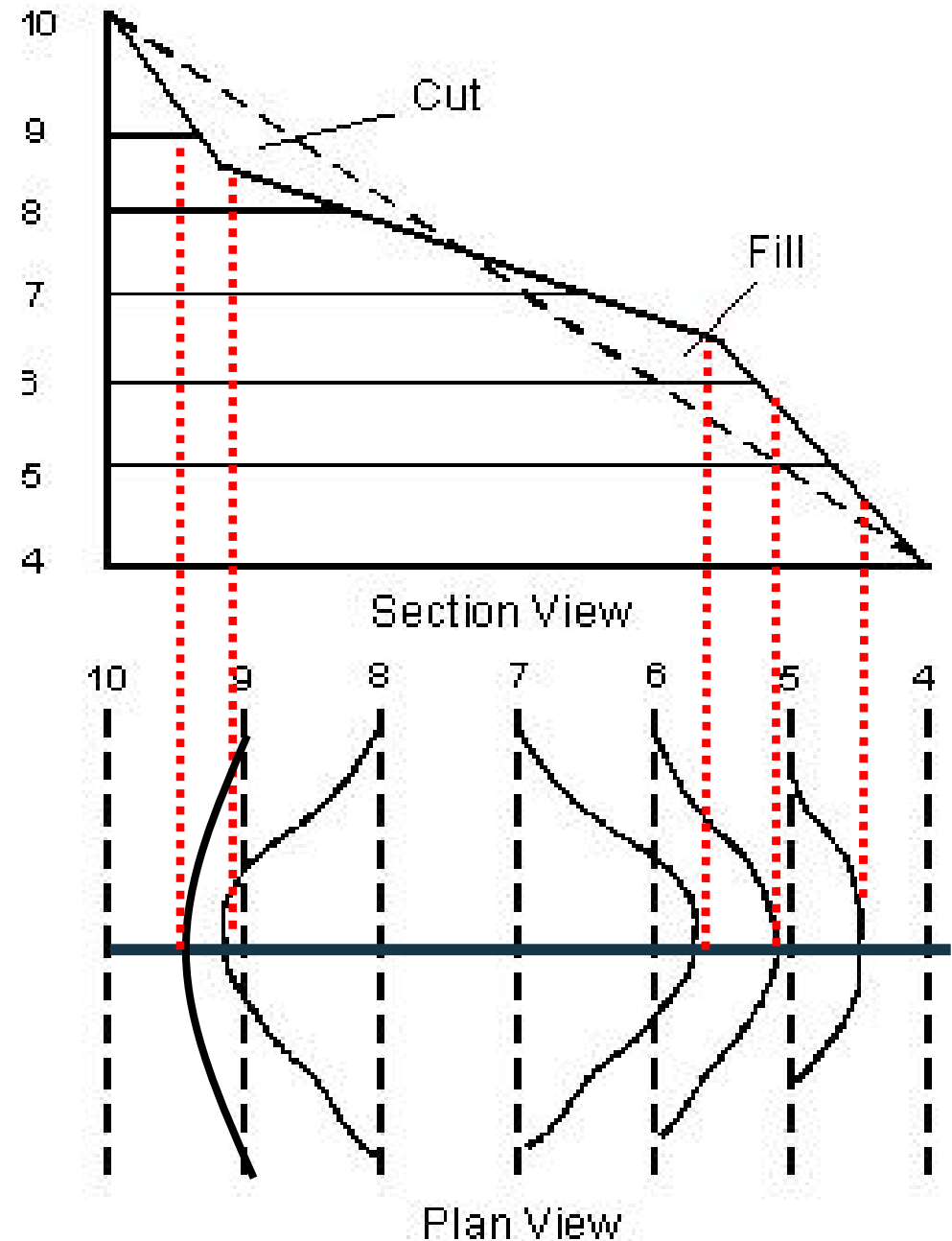
- Contour lines indicate the steepness of the terrain
- The closer the lines are together = steeper terrain
- Further apart means less steep



# Cut & Fill Slopes



# Cut & Fill Slopes

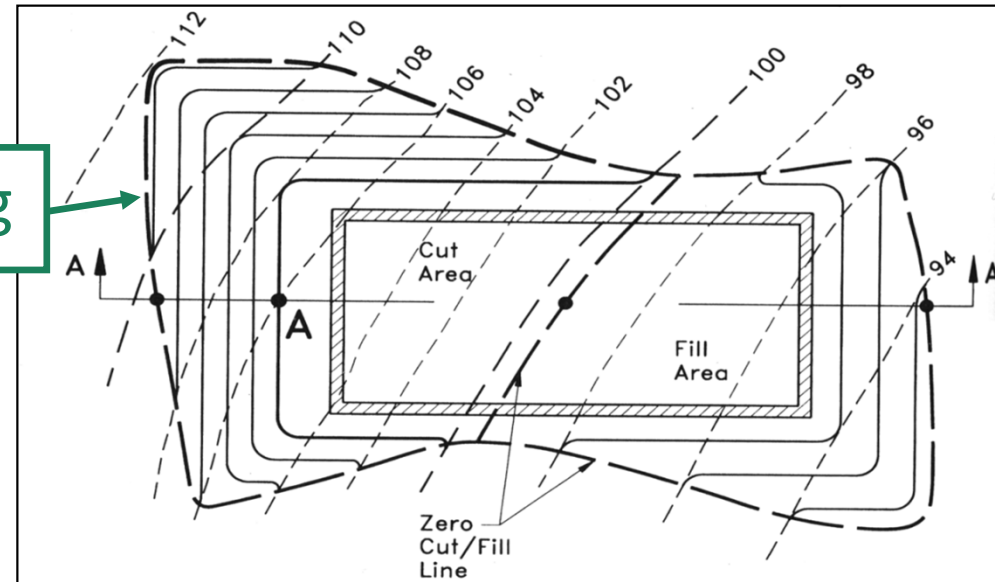




# Cut & Fill Slopes

Limits of grading

- Which way does the existing site drain?
- They want to put a building in the flow path, so a cut on the uphill side and a fill on the downhill side is required to create the flat building pad

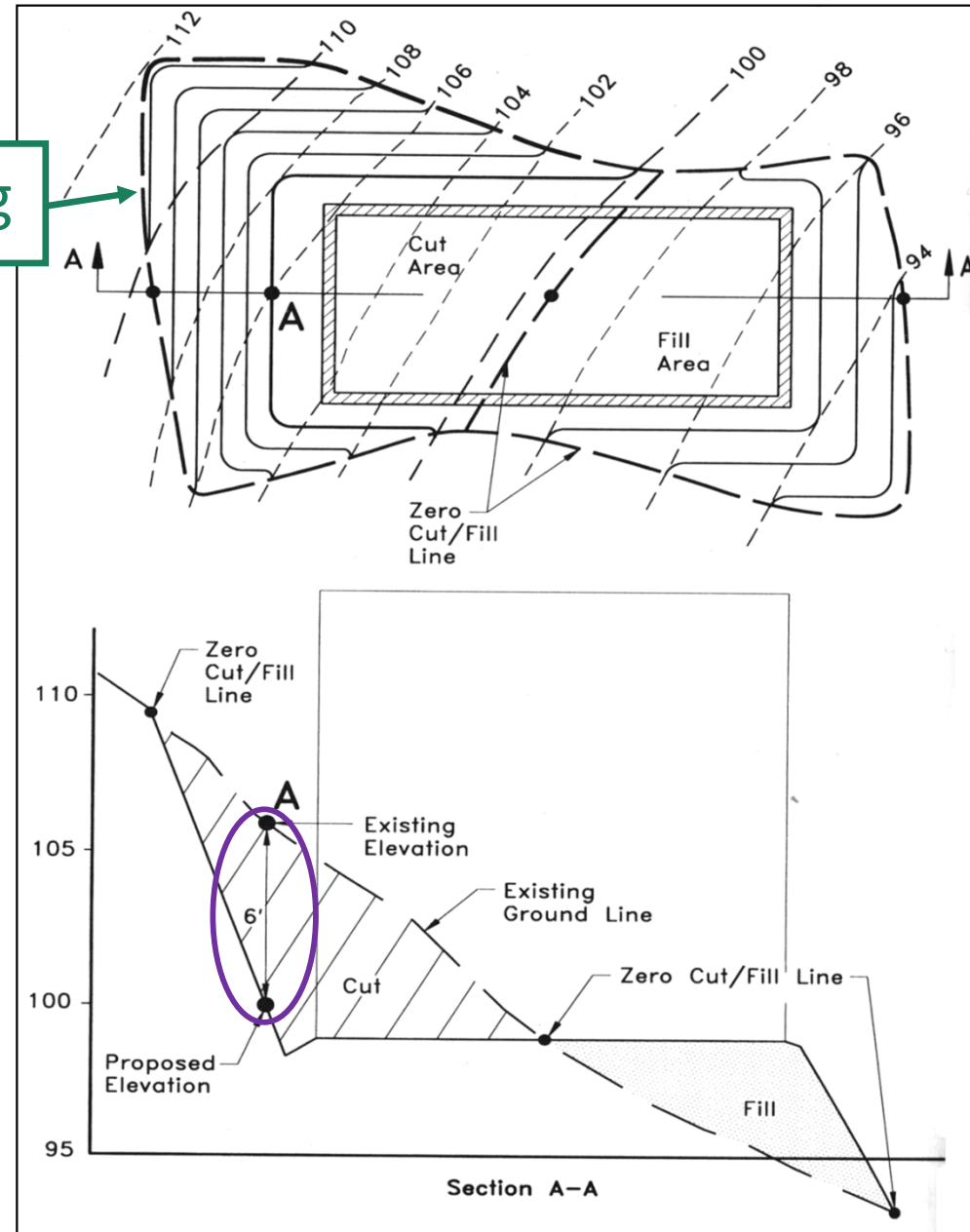




# Cut & Fill Slopes

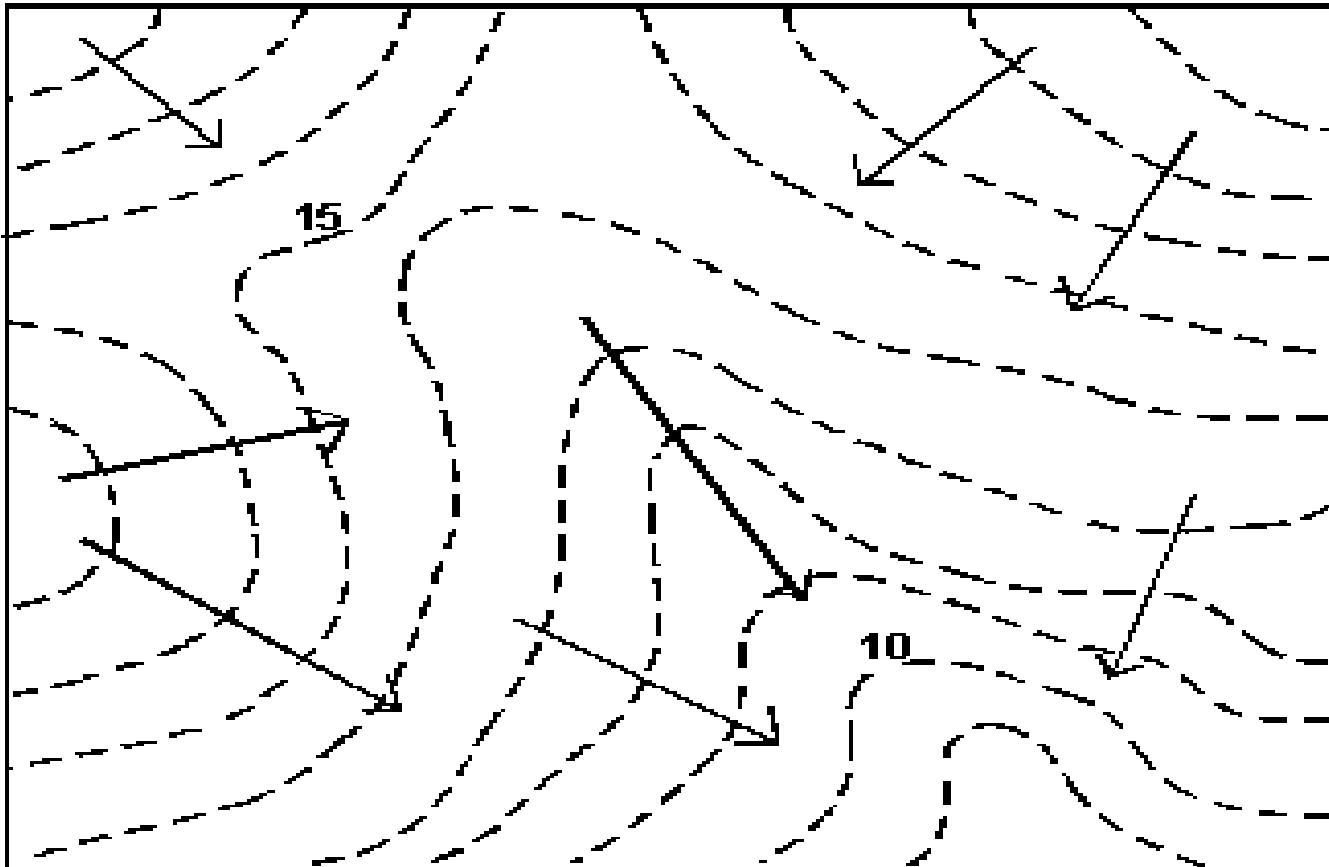
## Limits of grading

- Which way does the existing site drain?
- They want to put a building in the flow path, so a cut on the uphill side and a fill on the downhill side is required to create the flat building pad
- Water will be sent around the building to the downhill side



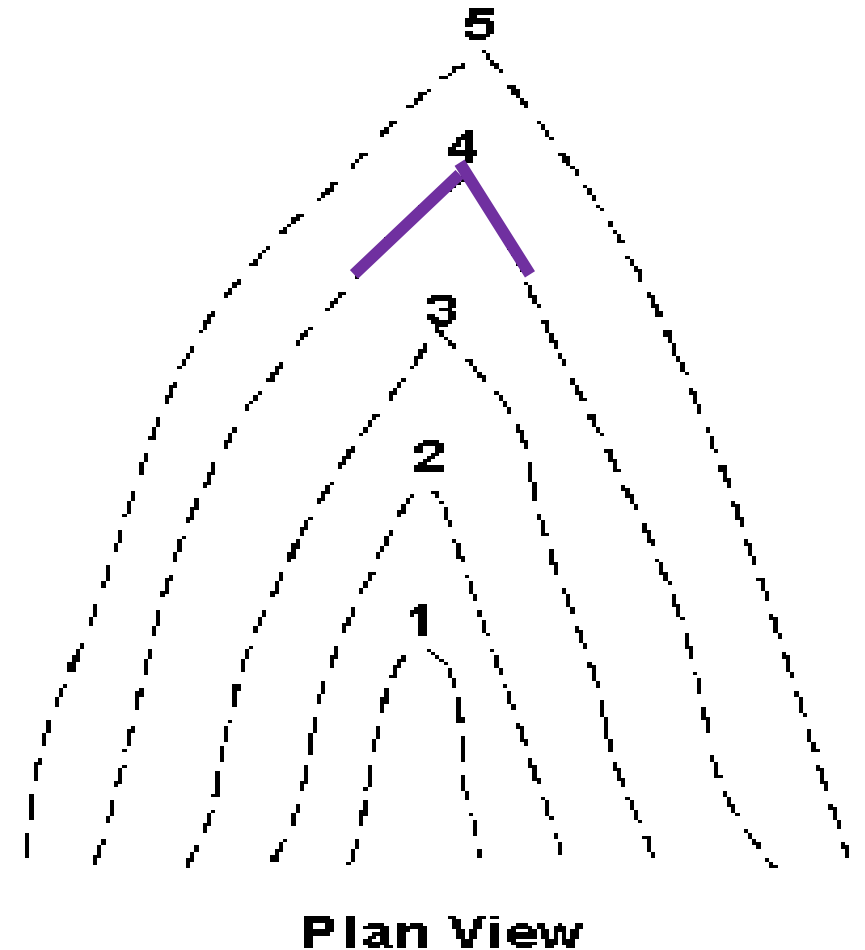
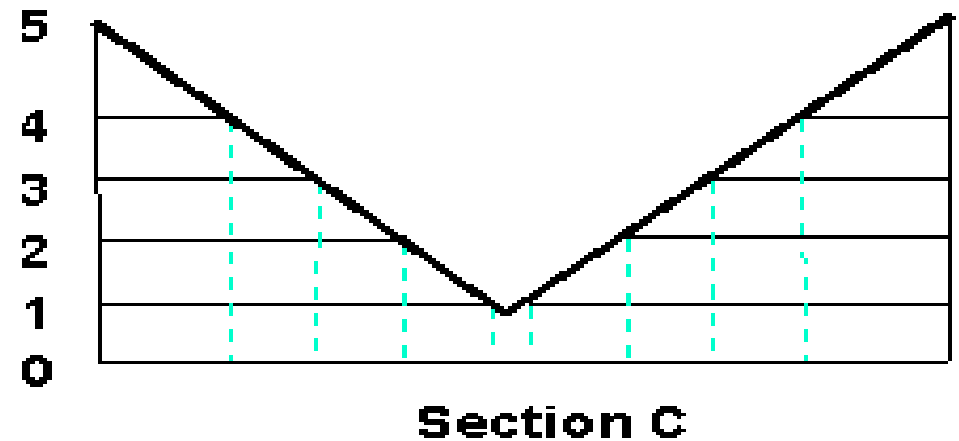
# Reading Contours

Water always flows perpendicular to contour lines.



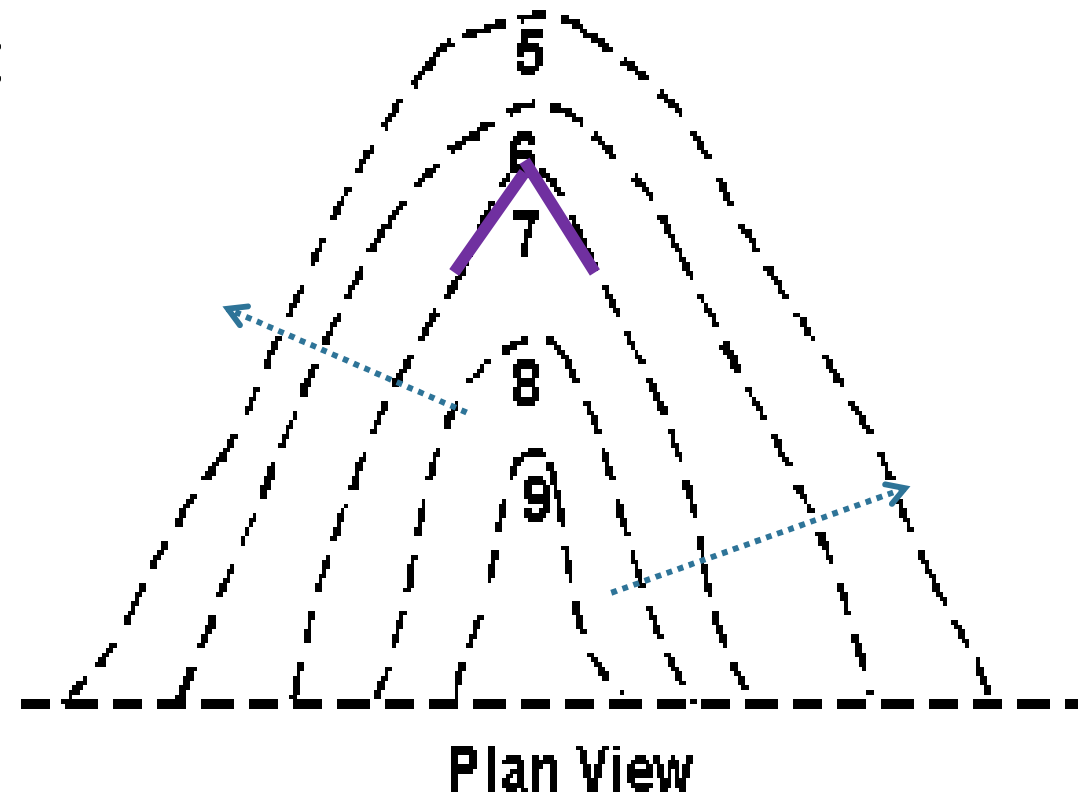
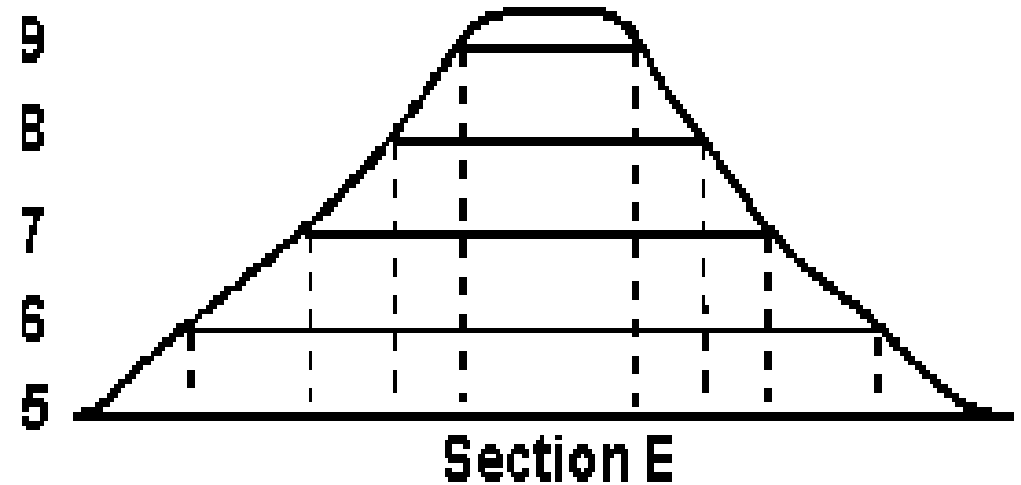
# Valley or Swale

- Represented by contours which point toward the higher numbers.
- Inverted V – points to higher numbers.

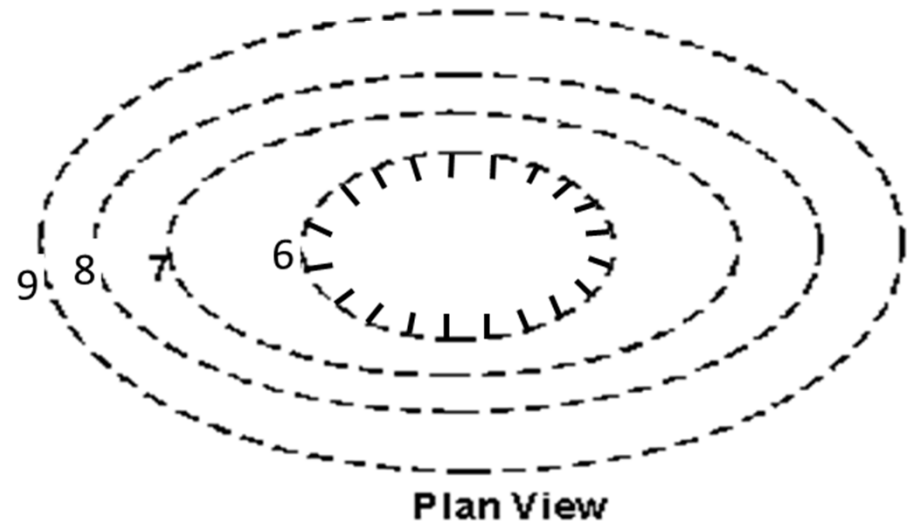
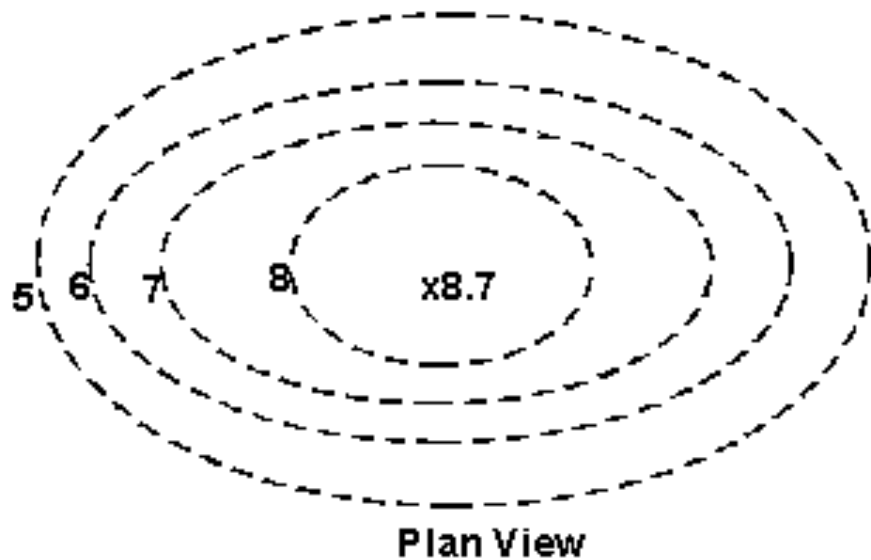
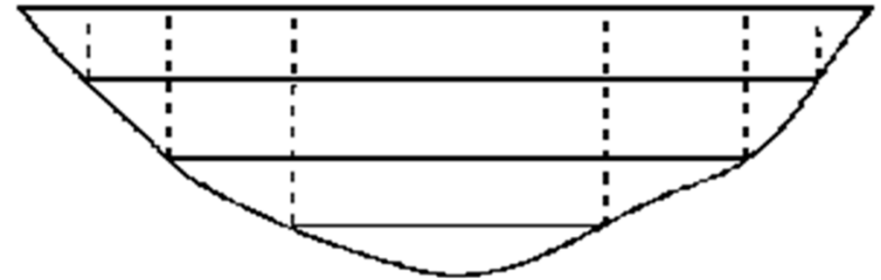
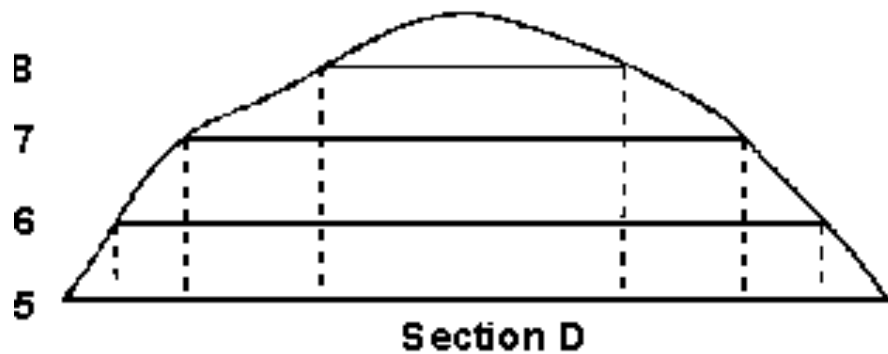


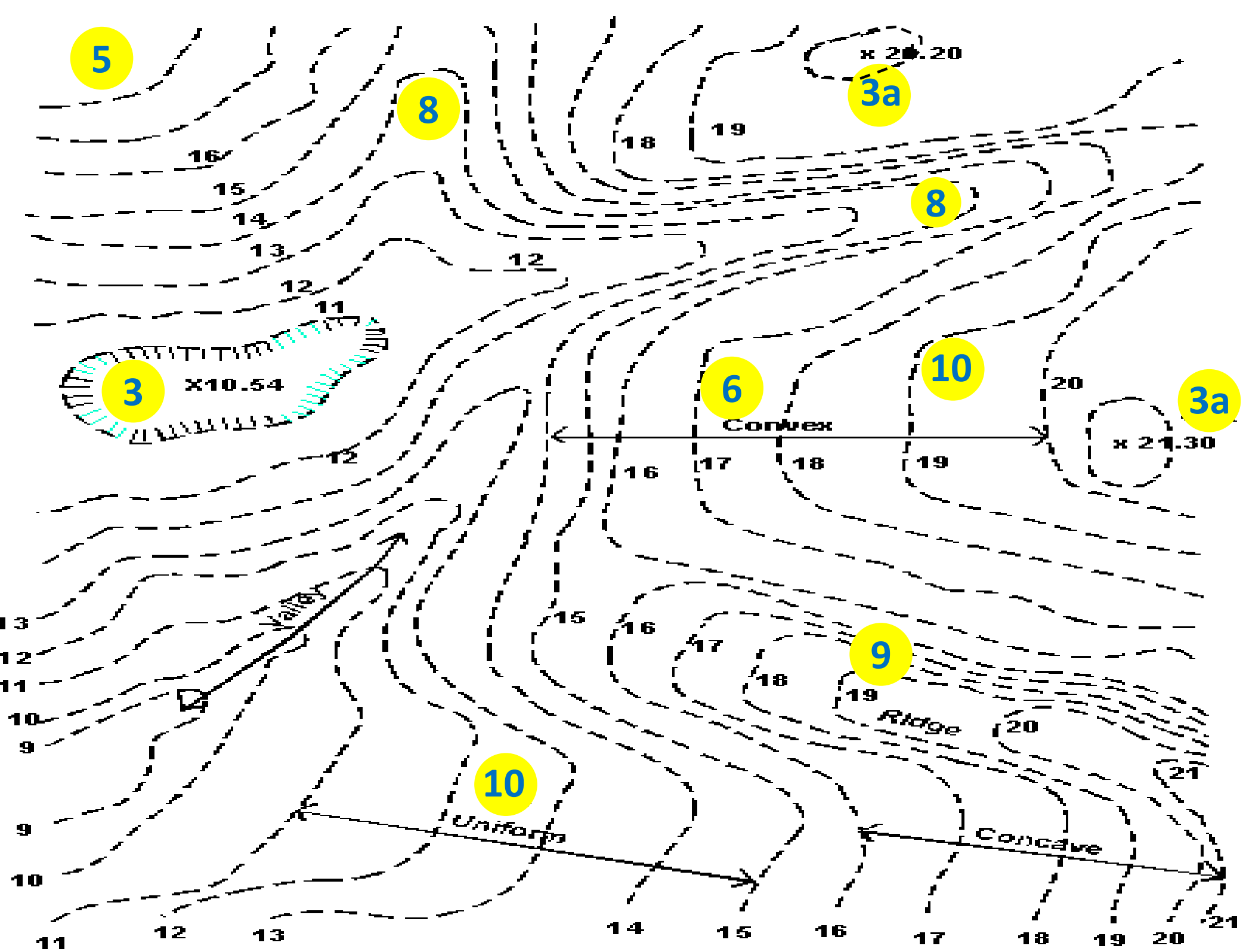
# Ridge

- Appears similar to a valley, but represented by contours which point toward the **lower** numbers.
- Denotes drainage divides.



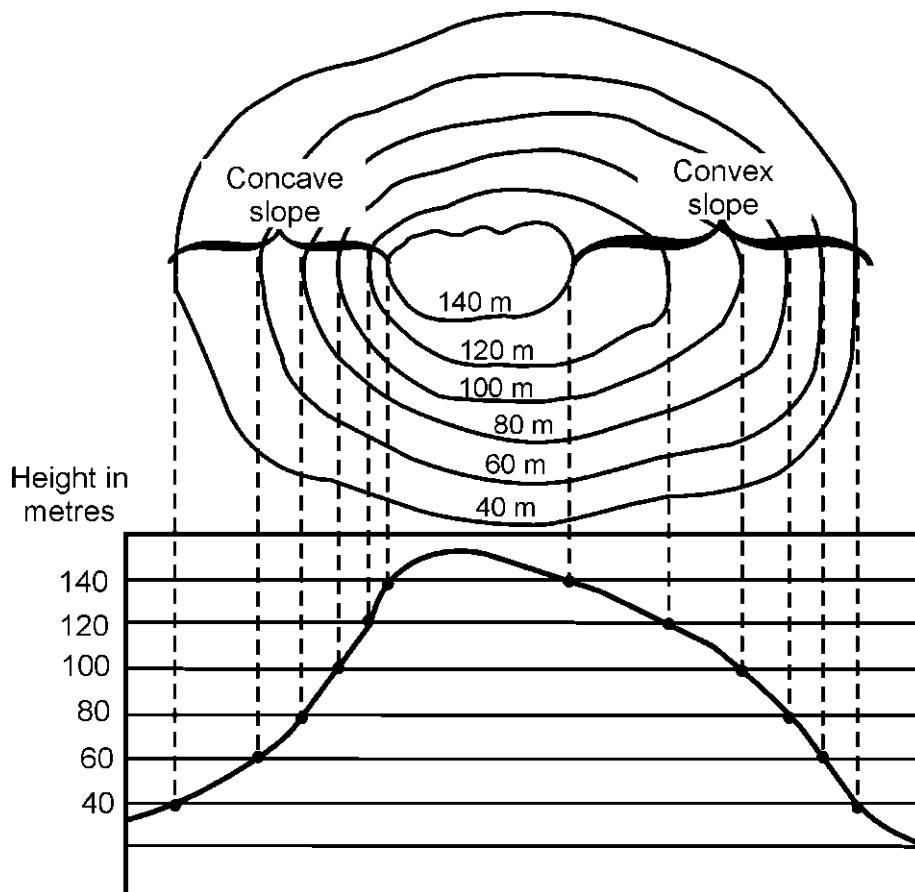
# Summit vs. Depression



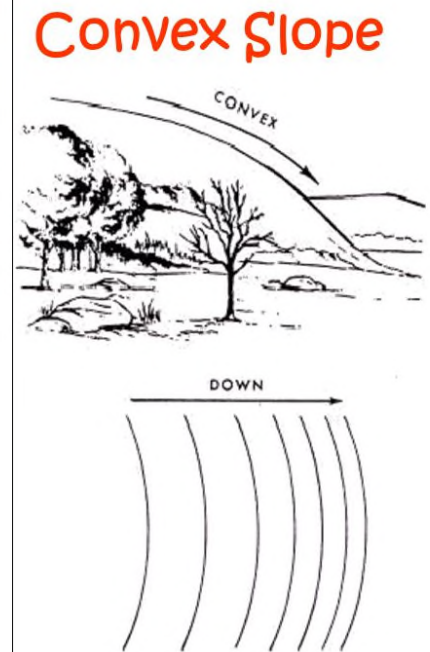
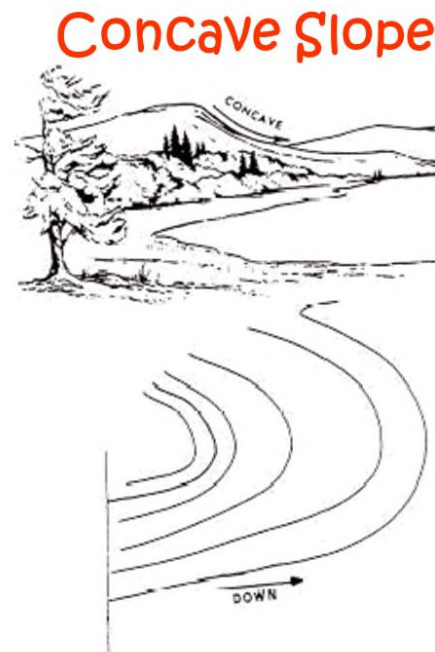


# Slopes and Slope Calculations

## Contour profiles



## Concave vs. Convex



# Slopes and Angles

- Presented as ratios (2:1, 3:1) or as percentages (50%, 33%)
- The closer the first number is to 0 or the higher the percentage, the steeper the slope.
- Slope = rise/run
- But ratios flip those two numbers, so it's run:rise
- For every three horizontal feet, there is one foot of vertical rise (3:1)



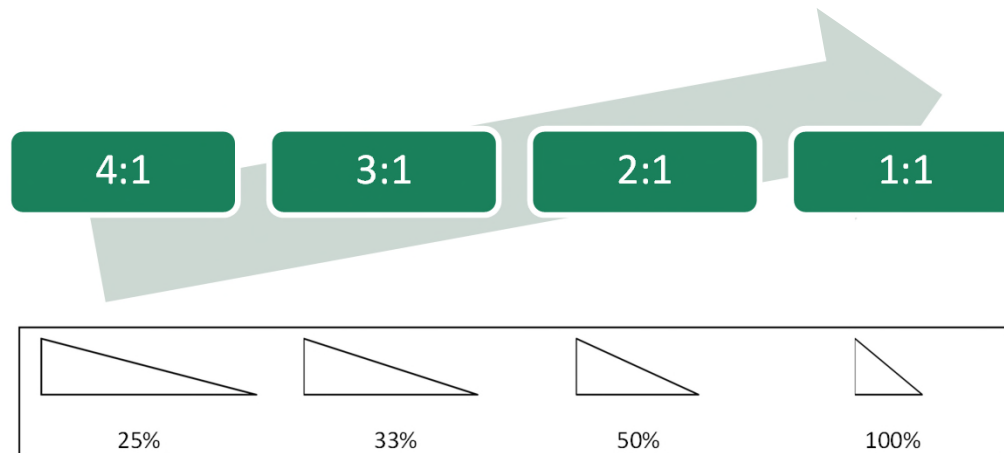


# Slopes and Angles



- Slope percentage divides the vertical distance by the horizontal distance, then multiplies by 100.

$$- \frac{1}{3} \times 100 = 33.3\% \text{ slope}$$



# Calculating Slope Steepness

- Choose two points of interest
- Find the elevation change (rise)
  - Subtract the two points of interest
- Measure the slope length (run)
- Divide rise/run
- Multiply by 100

$$\frac{(125 - 110)}{40} \times 100 = 37.5\% \text{ slope}$$

# Q&A



## 4a. ESC Plan Elements



## 4b. Minimum Standards



## 4c. Plan Reading Skills