Material Properties

Parameter name	Symbol	Value
Cohesion: soft glacial clay	C_{clay}	50 kPa
Internal friction angle: soft glacial clay	c,clay	30 deg
Unit weight: soft glacial clay	clay	15 kN/m^3
Unit weight: water	w	9.8 kN/m^3
Unit weight: dense sand, mixed grain size (stratified drift)	sand	20 kN/m^3
Internal friction angle: dense sand, mixed grain size	c,sand	42 deg
Unit weight: gravel, mixed grain size (rip-rap)	gravel	18 kN/m^3
Internal friction angle: gravel, mixed grain size	c,gravel	47 deg
Unit weight: colluvium (landslide deposit)	coll	16 kN/m^3
Internal friction angle: colluvium (landslide deposit)	c,coll	34 deg
Cohesion: colluvium (landslide deposit)	C_{coll}	calculate from field measurements of strength

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Factor of Safety formulae: Infinite slope and Swedish Method of Slices

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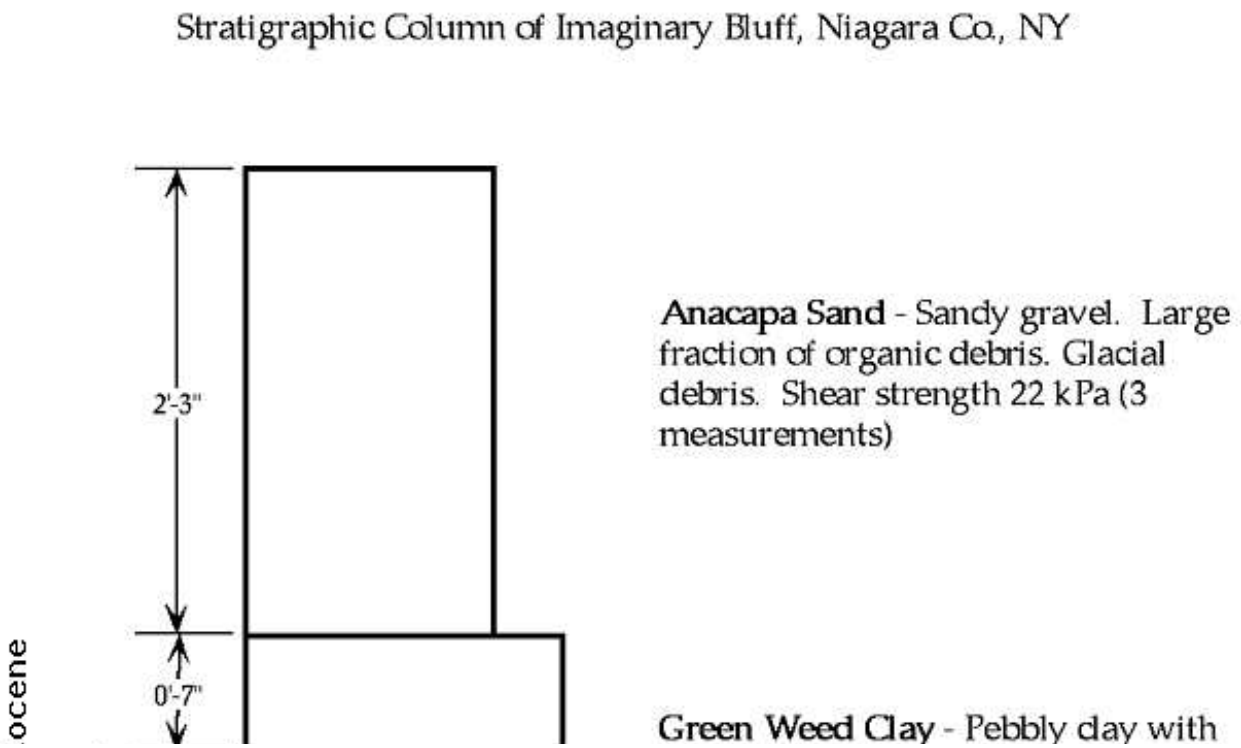
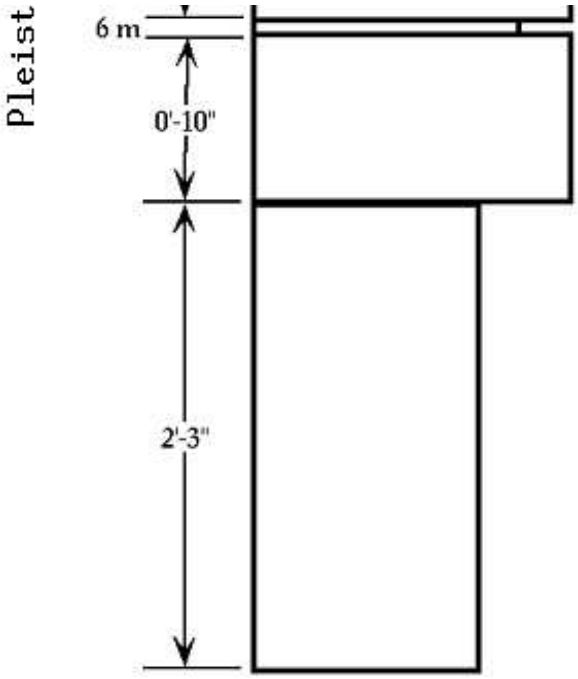
Example Stratigraphic Column





sand lenses. Beach deposit. Shear strength 15 kPa (5 measurements).

Cahuenga Diamicton - Poorly sorted, gravelly silty sand with large fossil logs. Debris flow deposit. Shear streng30 kPa (2 measurements).

You should have a more detailed description than is shown here.

Strength Determinations

(from Bowling Green State University)

Unconfined Compressive Strength

1. Prepare the penetrometer by attaching the spreader foot (if necessary) and sliding the red marking ring all way up (toward large end of penetrometer).
2. For compact, cohesive soil, level off a sample area. For non-cohesive soils, place in sample bowl to depth of at least 5 cm and level off top making sure not to compact soil.
3. Place tip of penetrometer on soil and slowly press until tip penetrates to a depth even with the ring on the tip. If using spreader foot, press until it penetrates to a depth even with the thickness of foot.
4. Read the strength in kg/cm2 from top edge of red marking ring (edge closest to large end of penetrometer).
5. If soil is too weak (i.e., reading does not fall on scale), attach spreader foot and repeat steps above. Strength = reading on scale /16.
6. Repeat the test at least three times and take average.

Shear Strength

1. Prepare sample as in compressive strength test.
2. Attach appropriate sized vane foot on torvane. If soil is strong, start with smallest foot.
3. Press torvane normal to surface to a depth equal to the thickness of the vane foot. Rotate dial counterclockwise until it reads 0.
4. Keeping an even vertical pressure (enough to keep the vane foot in the soil), rotate the torvane clockwise until the sample fails.
5. Record the value next to the index mark.
6. Repeat the test at least three times and take the average. Make sure to clean foot each time.
7. The standard vane foot (medium size) is read 0-1 kg/cm2. For the smaller foot, multiply the dial reading by 2.5; and for the largest foot, multiply dial by 0.2.

(last edited 2004/10/30 11:09:22.1545 GMT-4)