نمونه گیر های استوانه ای

(نمونه گیرهای شلبی ، U4 و پیستونی)

علی فاخر

نمونه گیر جدار نازک

(شلبی)

SHELBY Sampler

علی فاخر

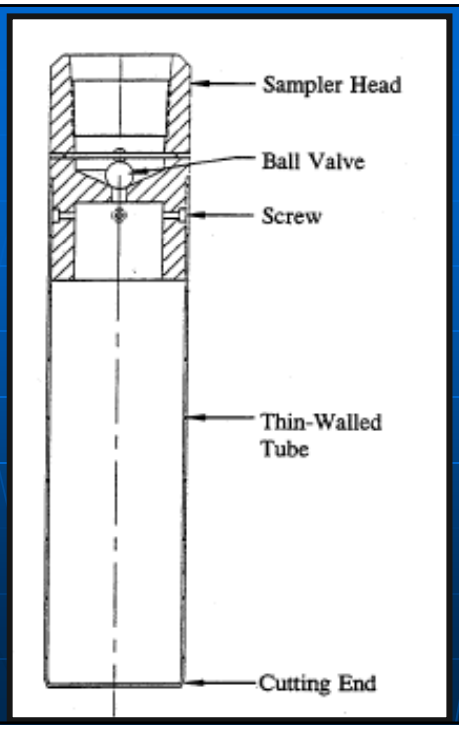
شلبی

قطر ۳ اینچ در طول ۱۰ اینچ

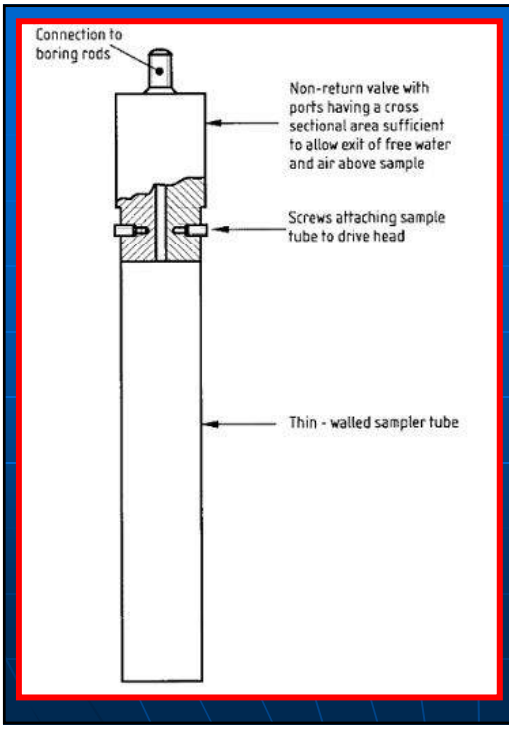
Shelby Tube

3" dia. x 10" long, thin-walled,
galvanized steel.

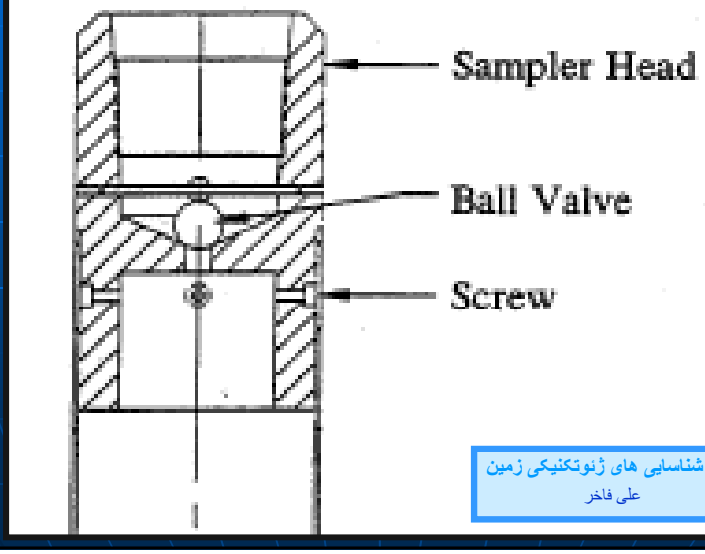
شلبی



تصویر دیگری از شلبی

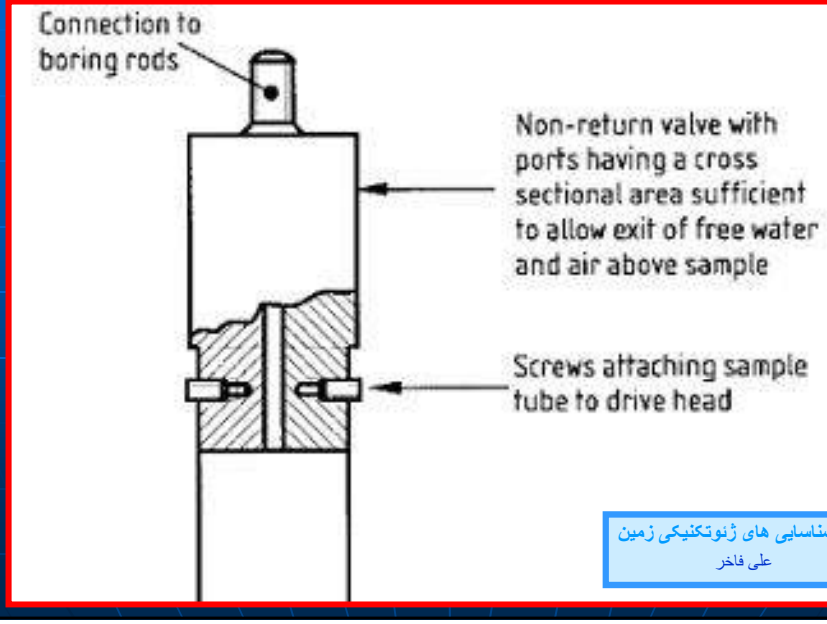


کلاهک شلبی



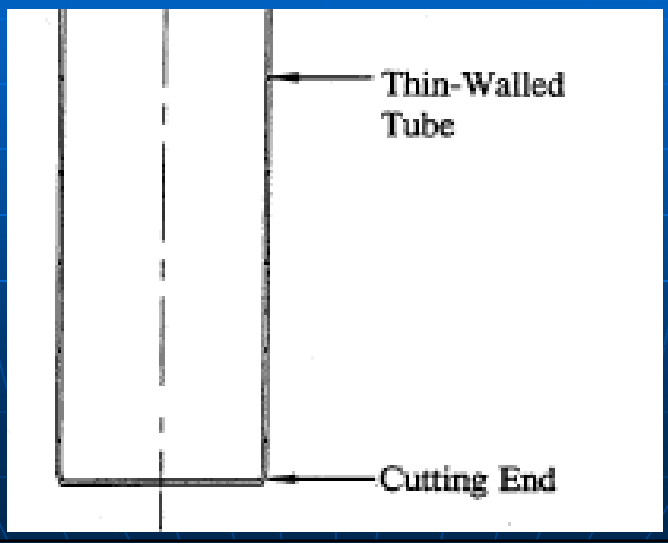
درس شناسایی های ژئوتکنیکی زمین
علی فاخر

کلاهک شلبی



درس شناسایی های ژئوتکنیکی زمین
علی فاخر

نوک شلبی



درس شناسایی های ژئوتکنیکی زمین
علی فاخر

نمونه گیر شلبی

درس شناسایی های ژئوتکنیکی زمین
علی فاخر


نمونه گیر شلبی
5 6:49


درس شناسایی های ژئوتکنیکی زمین
علی فاخر
نمونه گیر شلبی
5 7:08

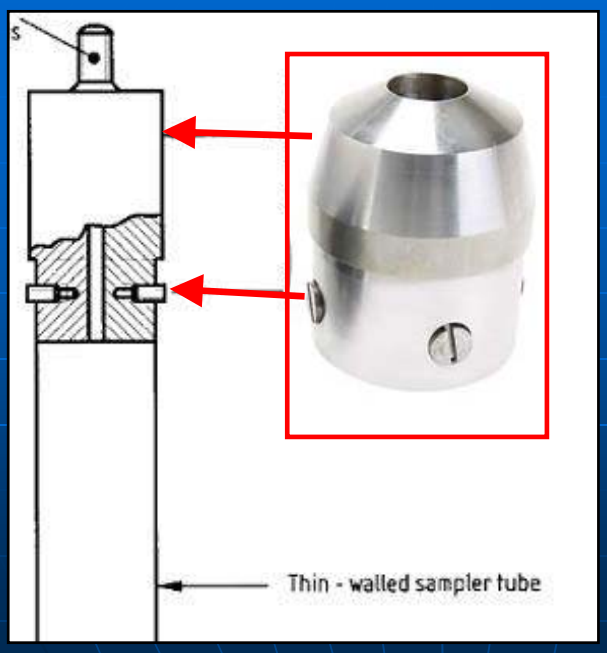
Selected Sizes and Types of Thin-Walled Shelby Tubes.

آببندی نمونه گیر با موم اندود کردن

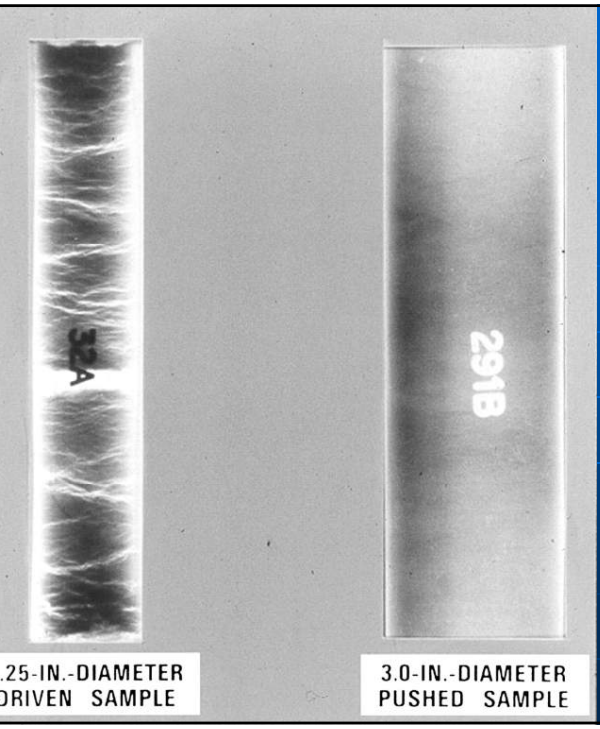
آببندی نمونه گیر با درپوش

Shelby Tube Caps
3" dia.
plastic caps for holding sample in tube during transportation and storage

Shelby Tube Drive Head



Drive Head



کیفیت نمونه فشاری بهتر از نمونه ضربه ای است.

نمونه گیر استوانه ای جدار ضخیم

علی فاخر

مثال هایی از نمونه گیر جدار ضخیم

U4

California sampler


درس شناسایی های ژئوتکنیکی زمین
علی فاخر
نمونه گیر U4


درس شناسایی های ژئوتکنیکی زمین
علی فاخر
شلبی
نمونه گیر U4

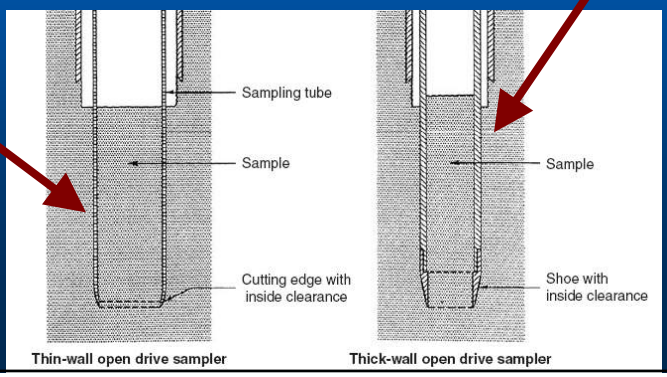
U4

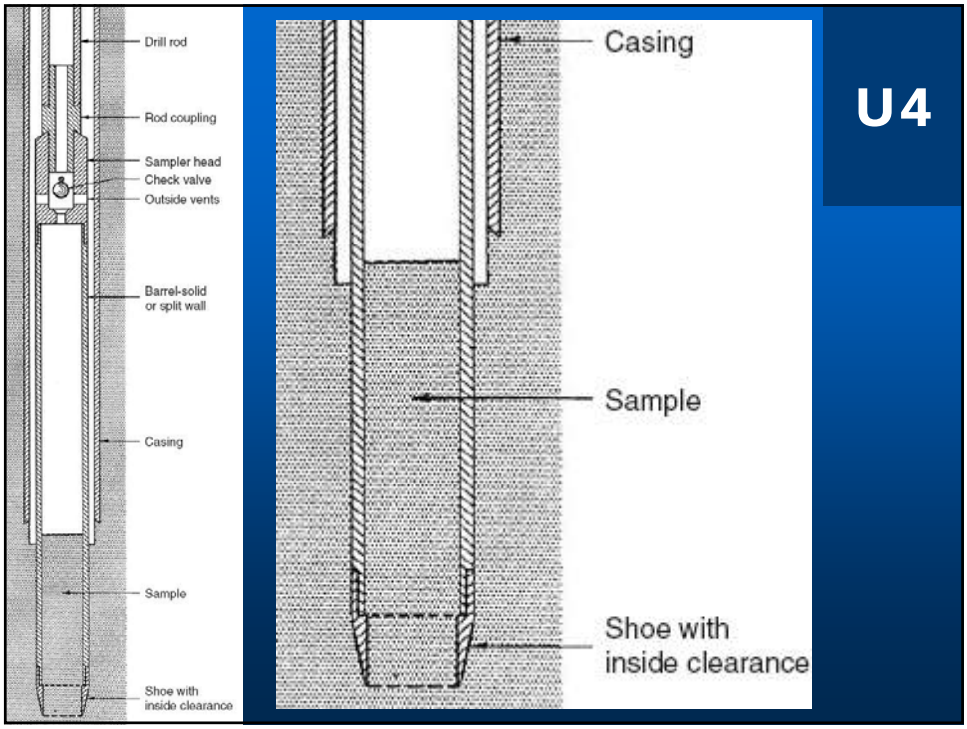
قطر = ۴ اینچ

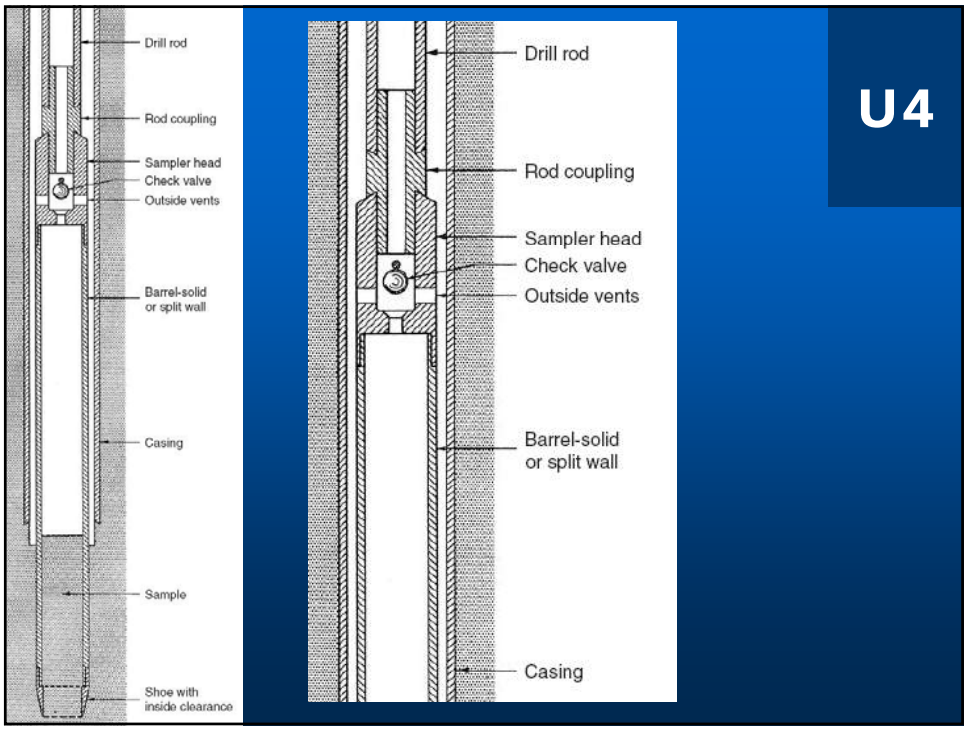
مقایسه نوک دو نوع نمونه گیر

U4

شلبی




Drill rod
Rod coupling
Sampler head
Check valve
Outside vents
Barrel-solid or split wall
Casing
Sample
Shoe with inside clearance
Casing
Sample
Shoe with inside clearance
U4


Drill rod
Rod coupling
Sampler head
Check valve
Outside vents
Barrel-solid or split wall
Casing
Sample
Shoe with inside clearance
Drill rod
Rod coupling
Sampler head
Check valve
Outside vents
Barrel-solid or split wall
Casing
U4


California sampler


California sampler in an open condition

California sampler

California sampler


California sampler


California sampler

California sampler

Sampler and Sample Ratios Used to Evaluate Sample Disturbance.

$$\text{Inside clearance ratio} = \frac{D_s - D_e}{D_e}$$

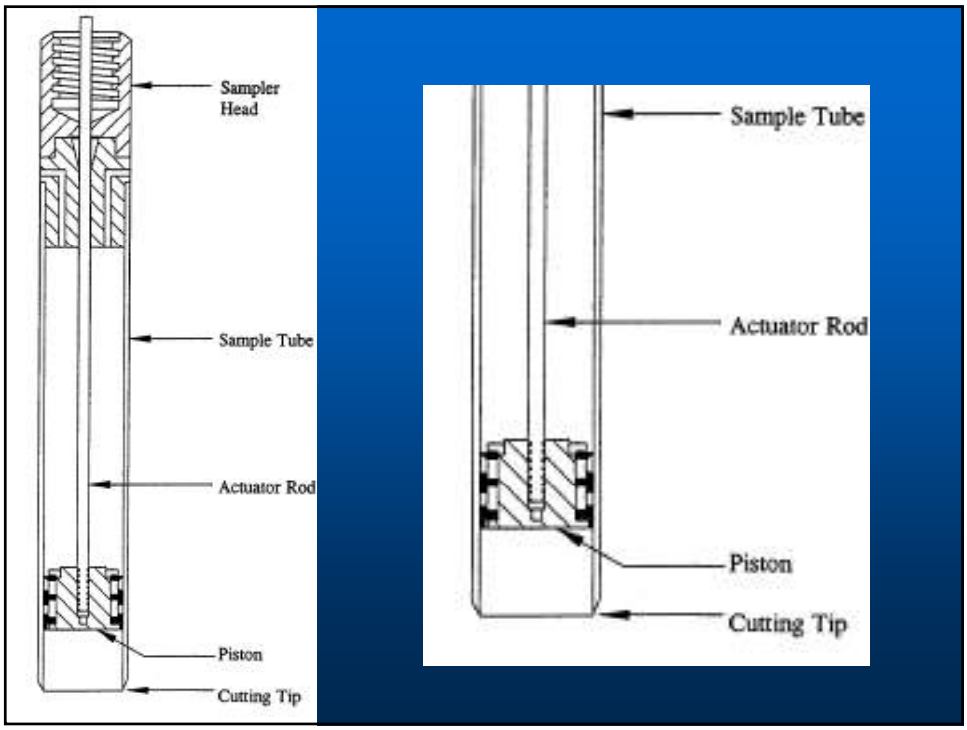
$$\text{Area ratio} = \frac{D_w^2 - D_e^2}{D_e^2}$$

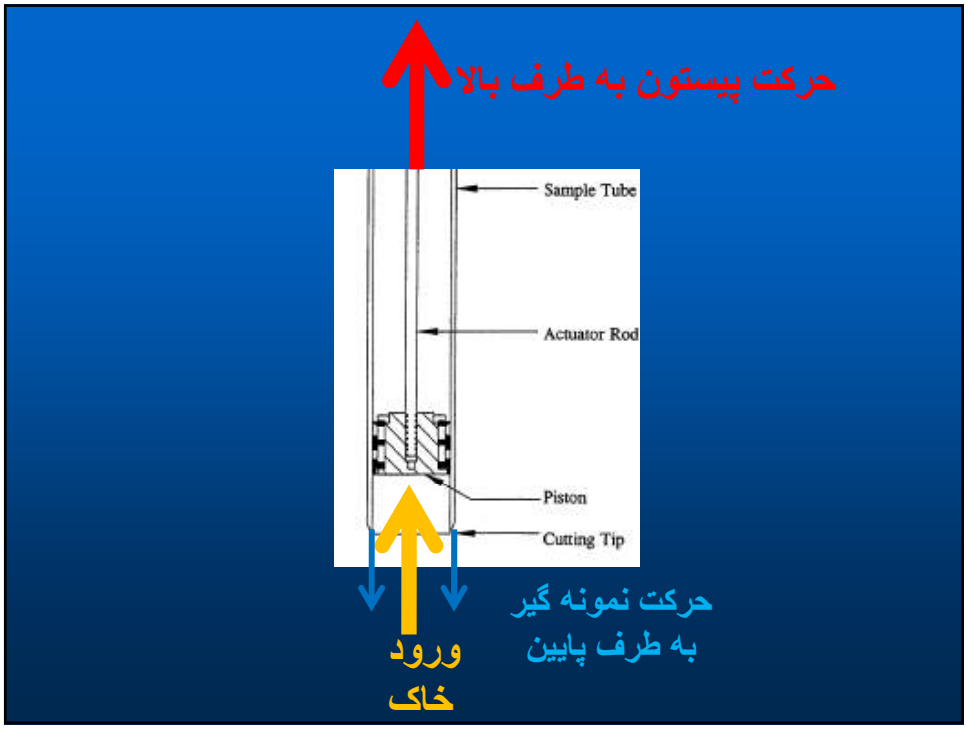
D_e = diameter at the sampler cutting tip (cm or in.)
D_s = inside diameter of the sampling tube (cm or in.)
D_w = outside diameter of the sampling tube, see Fig. 2.13 (cm or in.)

نمونه گير پيستوني

Piston Sampler

علی فاخر




حرکت پیستون به طرف بالا
Sample Tube
Actuator Rod
Piston
Cutting Tip
حرکت نمونه گیر
به طرف پایین
ورود
خاک

42


پیستون
43

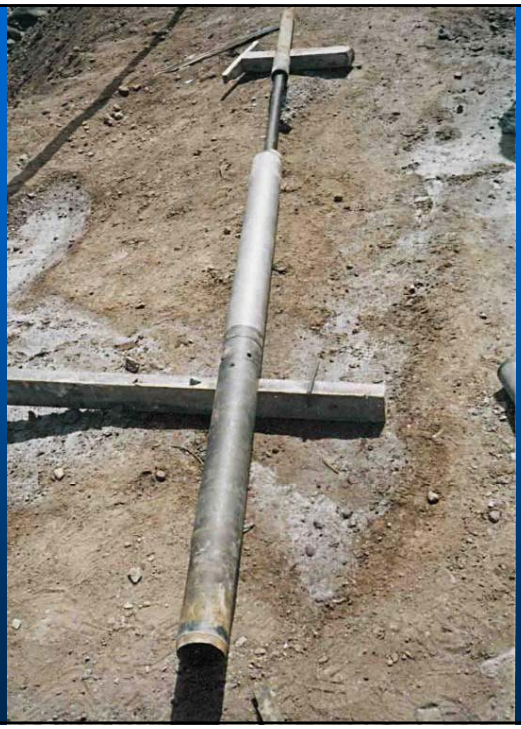

پیستون
5 9:20


پیستون
میله حفاری


پیستون
شلبی
آماده کردن
نمونه گیر پیستونی


5 10:52


دکتر پهلوان در
دوران دانشجویی
20 14:39



نمونه گیر پیستونی

آماده شده


نمونه گیر پیستونی
آماده شده
میله حفاری
دکتر پهلوان


وارد کردن
نمونه گیر
پیستونی
به داخل
لوله جدار
20 17:27

وارد کردن
نمونه گیر
پیستونی
به داخل
لوله جدار

خارج کردن
نمونه گیر پیستونی
از داخل
لوله جدار

نسبت های نمونه گیر و نمونه

Sampler and Sample Ratios

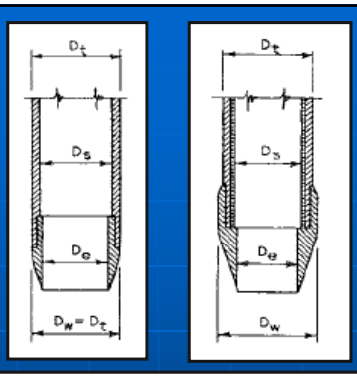
Used to Evaluate Sample Disturbance

علی فاخر

$$\text{Inside clearance ratio} = \frac{D_s - D_e}{D_e}$$

$$\text{Area ratio} = \frac{D_w^2 - D_e^2}{D_e^2}$$

D_e = diameter at the sampler cutting tip (cm or in.)
D_s = inside diameter of the sampling tube (cm or in.)
D_w = outside diameter of the sampling tube, see Fig. 2.13 (cm or in.)



INSIDE CLEARANCE	$C_i = \frac{D_s - D_e}{D_e}$	CONTROLS INSIDE FRICTION
OUTSIDE CLEARANCE	$C_o = \frac{D_w - D_t}{D_t}$	CONTROLS OUTSIDE FRICTION
AREA OR KERF RATIO	$C_a = \frac{D_w^2 - D_e^2}{D_e^2}$	$\frac{\text{VOLUME OF DISPLACED SOIL}}{\text{VOLUME OF SAMPLE}}$

a sampling tube for undisturbed soil specimens should have an inside clearance ratio of about 1 percent and an area ratio of about 10 percent or less.

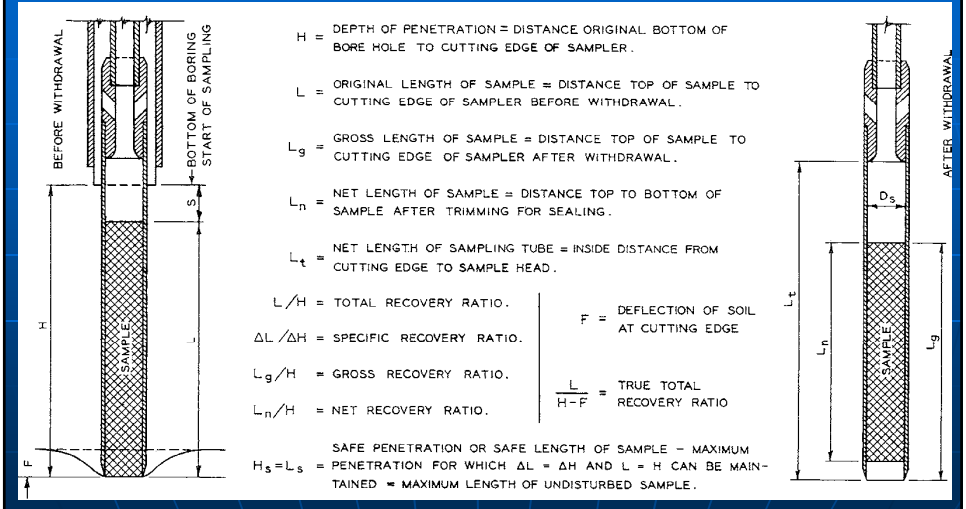
Having an inside clearance ratio of about 1 percent provides for tip relief of the soil and reduces the friction between the soil and inside of the sampling tube during the sampling process. A thin film of oil can be applied at the cutting edge to also reduce the friction between the soil and metal tube during sampling operations.

The purpose of having a low area ratio and a sharp cutting end is to slice into the soil with as little disruption and displacement of the soil as possible. Shelby tubes are manufactured to meet these specifications and are considered to be undisturbed soil samplers.

As a comparison, the California sampler has an area
ratio of 44 percent and is considered to be a thick-walled sampler.

Examples of ratios that can be used to assess the possibility of sample disturbance of the actual soil specimen:

the total recovery ratio, specific recovery ratio, gross recovery ratio, net recovery ratio, and true recovery ratio. These disturbance parameters are based on the compression of the soil sample due to the sampling operations.



Because the length of the soil specimen is often determined after the sampling tube is removed from the borehole, a commonly used parameter is defined as:

Gross recovery ratio = *Lg/H*

where Lg is gross length of sample, which is the distance from the top of the sample to the cutting edge of the sampler after removal of the sampler from the boring (in. or cm). H is depth of penetration of the sampler, which is the distance from the original bottom of the borehole to the cutting edge
of the sampler after it has been driven or pushed in place (in. or cm).

Gross recovery ratio = *Lg*/*H*

The closer the gross recovery ratio is to 1.0 (or 100 percent), the better the quality of the soil specimen.