

EXAMPLE

SEPTIC SYSTEM COMPONENT ELEVATIONS

BM (Benchmark) = 100.0 (fixed or assumed)

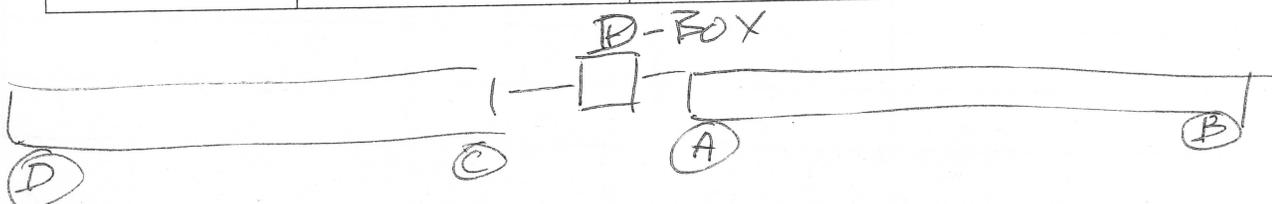
HI (Height of Instrument) = BM + BS (rod reading) =

$$HI = 100 + 7.5 = 107.5'$$

EL (Elevation) = HI - FS (rod reading) =

$$EL = 107.5' -$$

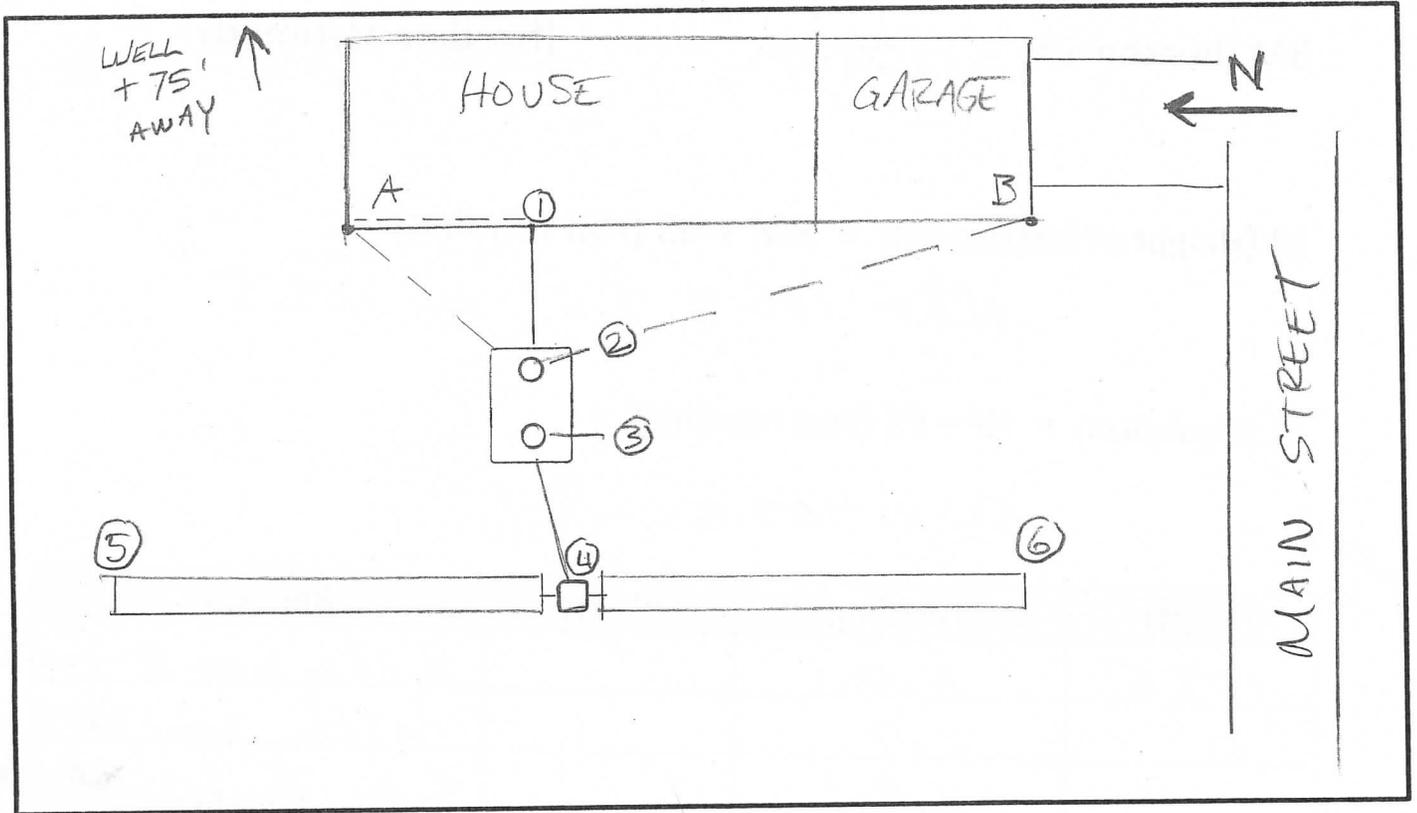
HI (ft)	Rod Reading (ft)	EL (ft)	Remarks
107.5	4.0		Building Sewer @ Foundation
	4.7		Building Sewer @ S.T.
	4.95		Septic Tank Outlet pipe
	6.0		B-BOX Inlet Pipe
	6.1		TOP OF L.S. (A)
	6.1		TOP OF L.S. (B)
	6.2		TOP OF L.S. (C)
	6.2		TOP OF L.S. (D)



EXAMPLE

ASBUILT DRAWING

SITE SKETCH: Building location, SSDS components, street, well, directional arrow.



Swingties to SSDS components

Component	A	B	Notes
① BUILDING SEWER	15'	30'	② FOUNDATION
② S.T. MANHOLE	20'	35'	INLET SIDE
③ S.T. MANHOLE	23'	38'	OUTLET SIDE
④ D-BOX	40'	49'	
⑤ L.S. END	50'	80'	NORTH END
⑥ L.S. END	70'	40'	SOUTH END

“SHOOTING” SEPTIC SYSTEMS

- Make sure there's a benchmark provided on the plan during your review. Remember, ideally it should be within 5-10' of the elevation of the septic system.
- Whether you use a laser or a transit the first thing you need to do is level the instrument. Hopefully, you've told the contractor to have one set up for the final inspection.
- If you're working with a laser, turn on the transmitter and receiver.
- It's time to take the first shot. If you're working with a contractor, you read the shots (transit) and he holds the “stick”. If you're running off a laser, let the contractor adjust the receiver, but you read and write down the numbers.
- “Shoot” the benchmark (BM) first.
- Add the reading to the benchmark number. (Example: BM=243.58, and stick reads 4.76)
 $243.58 + 4.76 = 248.34$
This number is your height of instrument (HI). All calculations will now be a subtraction from that.
- Be very careful to note where you are reading on the stick. It is a natural human tendency to see the closest foot number and use it. If, for example, you read .87 and you see “6 feet” on the stick above your reading, you will be tempted to write 6.87 but you know it's really 5.87!
- Contractors with lasers are a fun sight. They'll put the stick at a variety of angles to show you it's virtually the same reading when the receiver “tones”. It's not that hard to adjust the receiver slightly (up or down the stick) to get an accurate reading.
- Learn to “reverse read” the stick. You'll be one up on 75% of the contractors you'll be inspecting! You'll get a demonstration of this today.

WORKSHEET

Benchmark (BM) = _____

+ _____ (stick reading)

= _____ (height of instrument (HI))

Height of Instrument (HI) = _____

- _____ (first shot on top of pipe)

= _____ (elevation of top of pipe)

- _____ .33 _____ (the diameter of a 4" pipe)

= _____ (the flowline or invert of that pipe)

Let's try another one

Height of instrument (HI) = _____ (take # from HI above)

- _____ (top of 12" gallery or infiltrator)

= _____ (top of unit elevation)

- _____ 1.00 _____ (the height of the unit)

= _____ (the inferred bottom elevation)

I find it easy to keep track of my readings on a sheet of paper with a rough sketch of the system. Check all of the numbers against the plan and the health code. **DO NOT** have the transit or laser taken down until you've checked all your numbers. It's easy to make a mistake, so check for reasonableness in your numbers and realize that if you are routinely off a certain amount (like a foot) you may have misread the stick. Just keep your cool until you know you're right, then still keep your cool and discuss what's wrong. Usually, the engineer needs to be notified of significant errors.

Be confident and competent!