



# Considerations for *Toilet & Septic tank* Construction

# Structure of presentation

## □ Toilet construction

- *Where to place a toilet*
- *Size of toilet*
- *Materials for toilet construction*
- *Other design aspects of toilet construction*
- *Superstructure*

## □ Septic tank construction

- *Where to place a septic tank*
- *Size of septic tank*
- *Materials for septic tank construction*
- *Other design aspects of septic tank construction*
  - *Base of septic tank*
  - *Inlet and out levels*
  - *Provision of ventilation pipe*

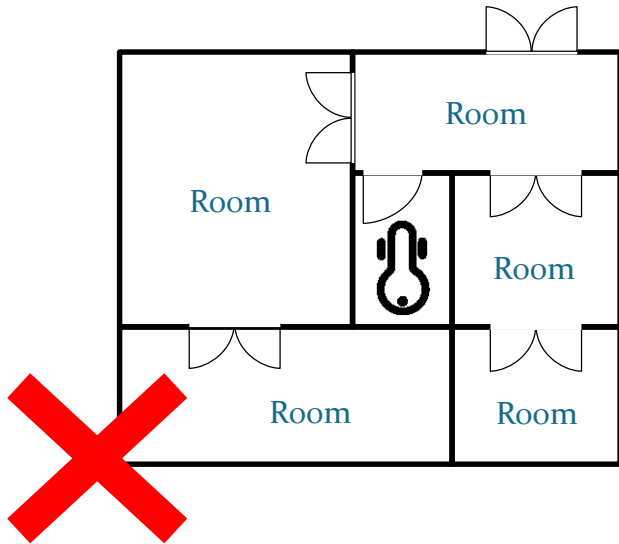
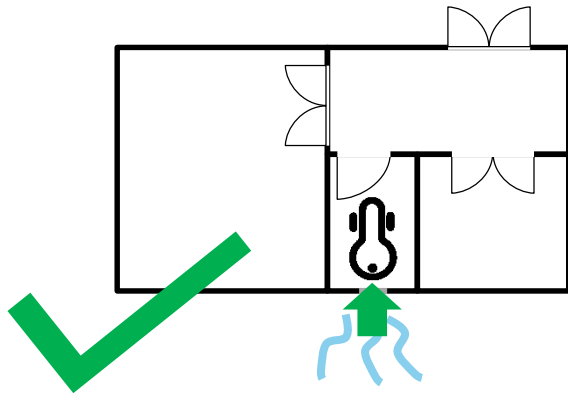
## □ Standard design of toilet and septic tank

## □ Other technology options

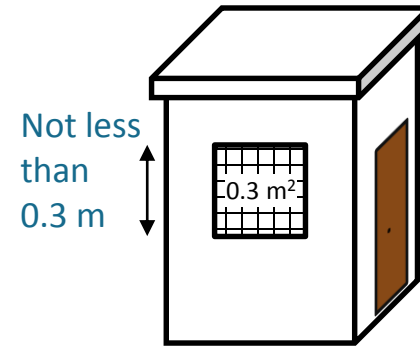
# Toilet Construction . . .

# Where to place a toilet . . .

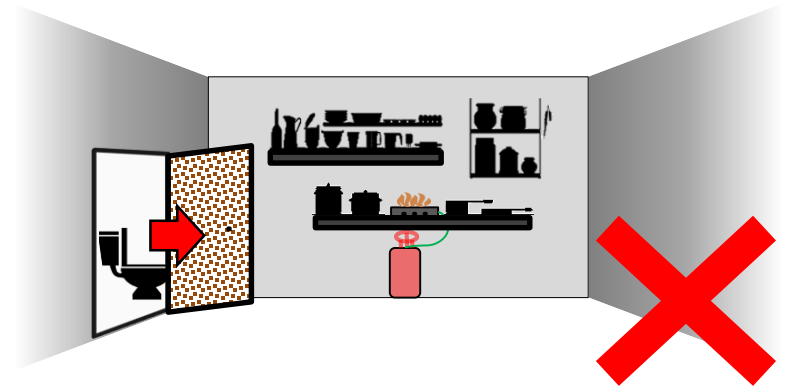
At least one wall open to fresh air



Window / ventilator

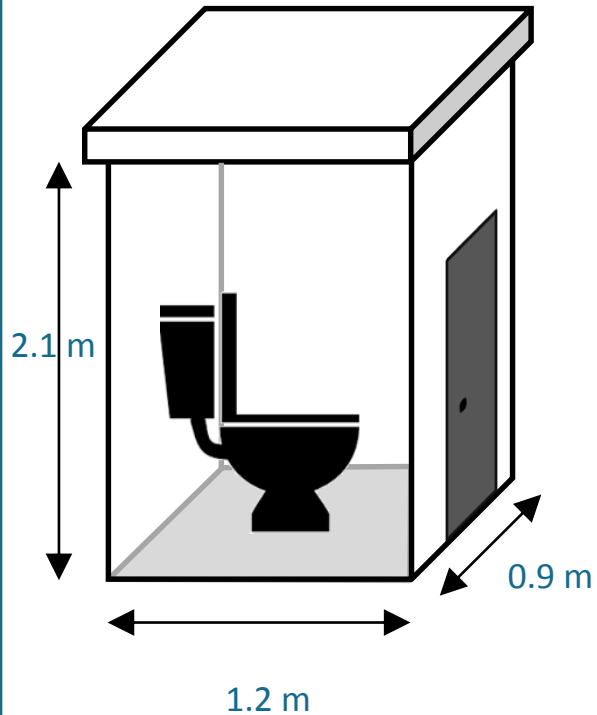


Should not open into kitchen

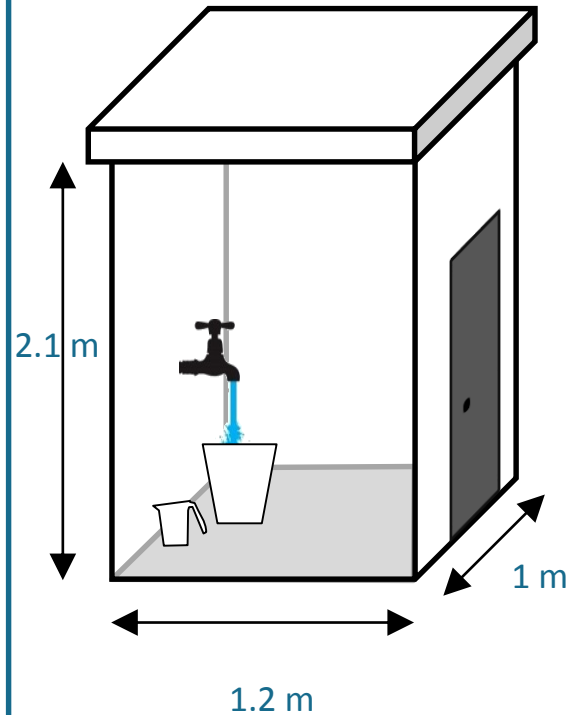


# Minimum Size of toilet. . .

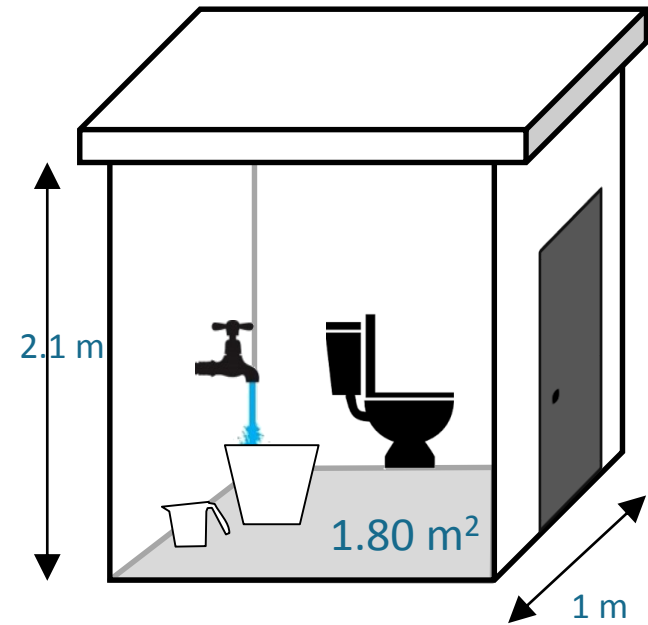
Toilet



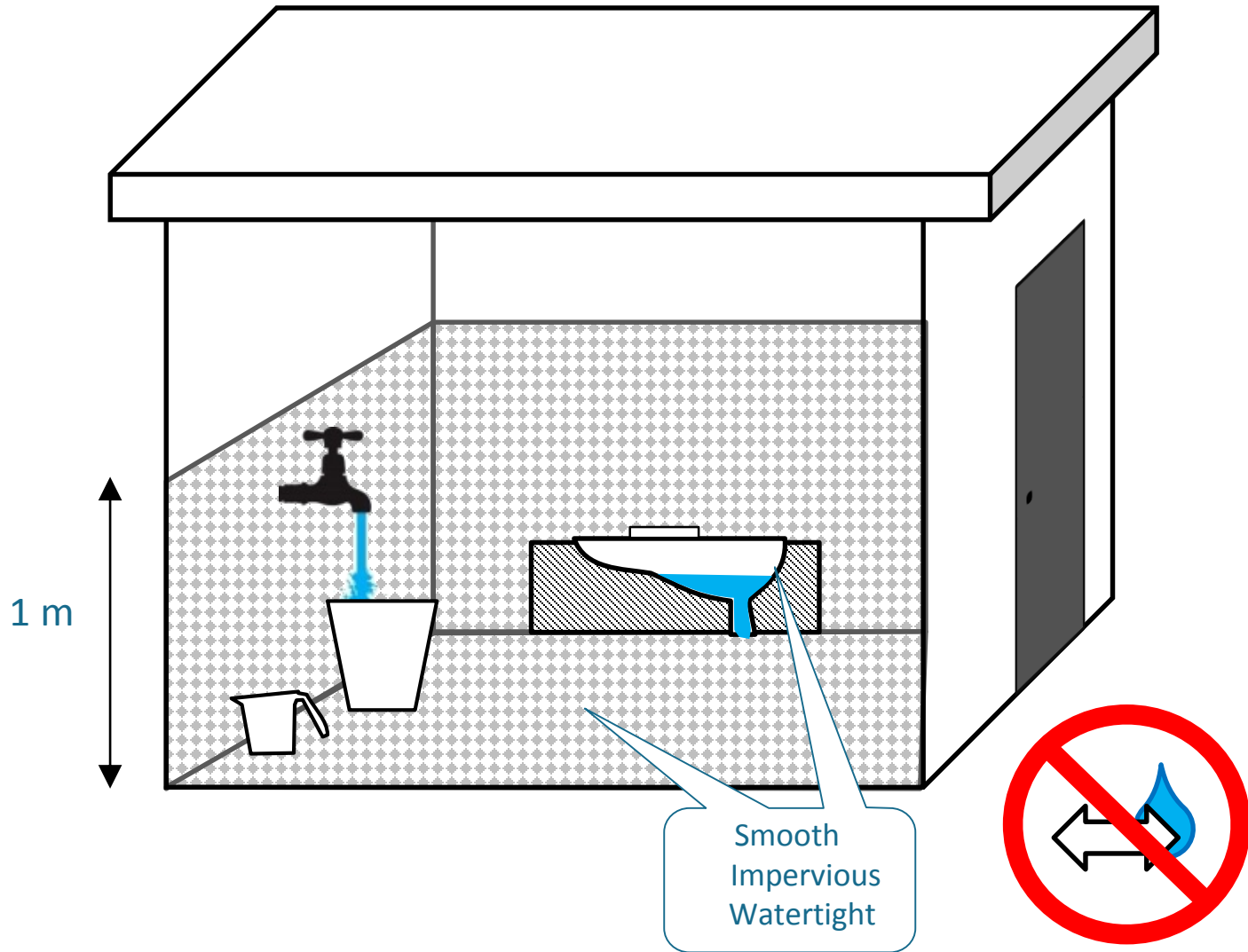
Bathroom



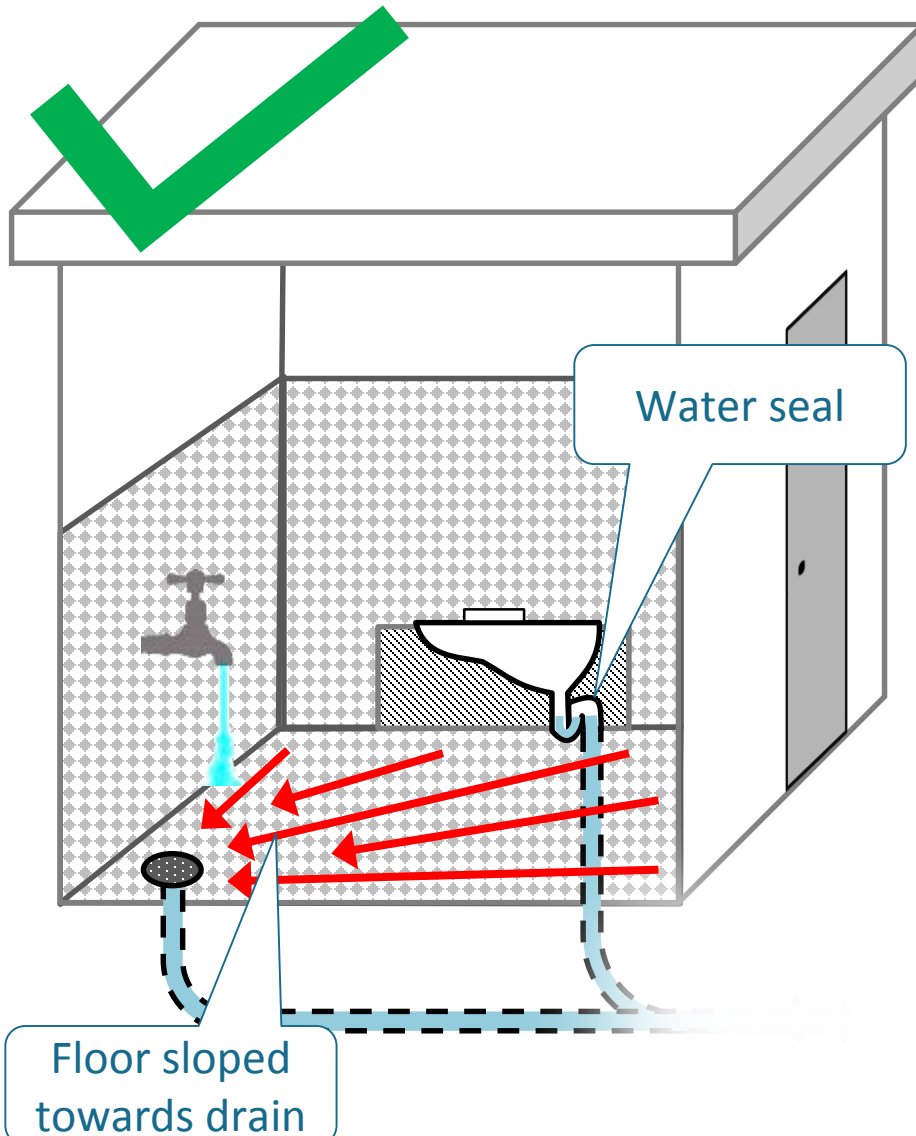
Combined



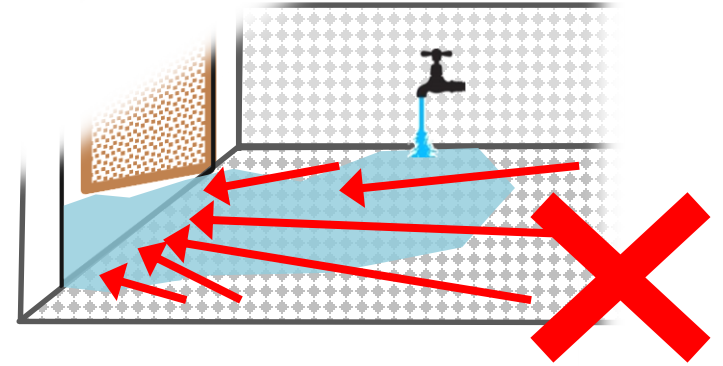
# What Material to use . . .



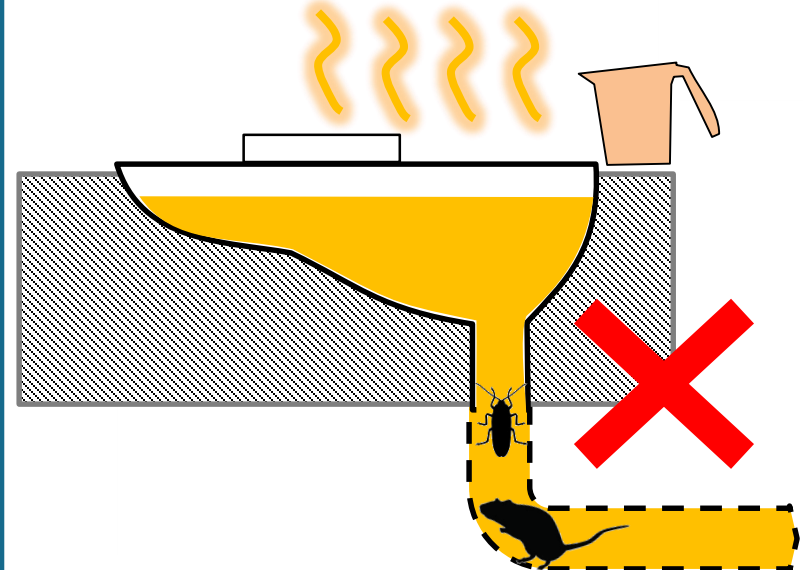
# Proper toilet design. . .



Do not slope floor into adjoining room



Problems without water seal



Superstructure...



# Super structure design. . .



Brick, mortar  
with RCC roof  
and tin door



Ferrocement  
brick



Concrete brick



Plastic pre-  
fabricated



Corrugated  
sheet



Bamboo

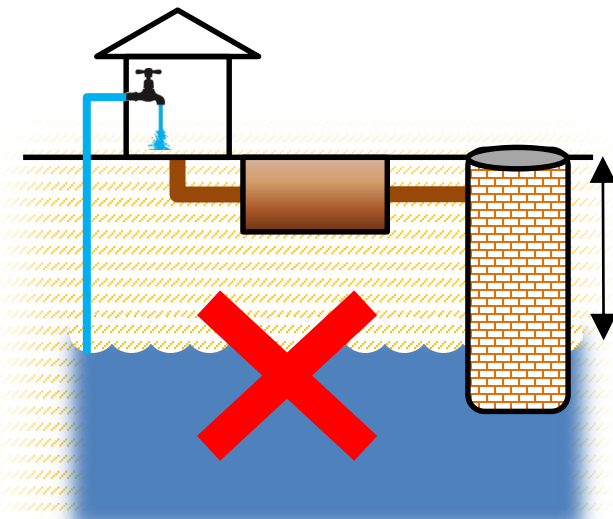
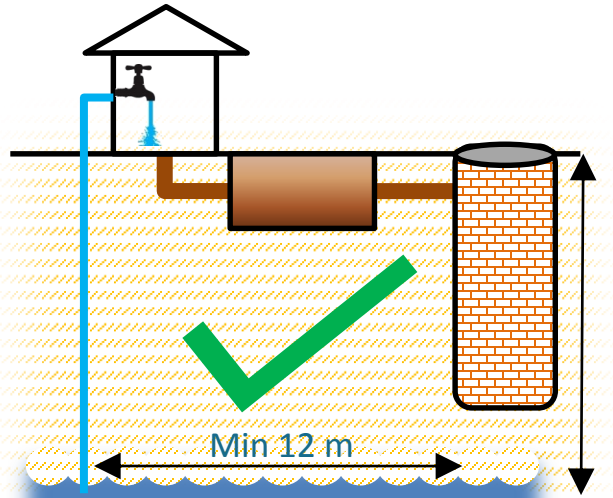


Thatched

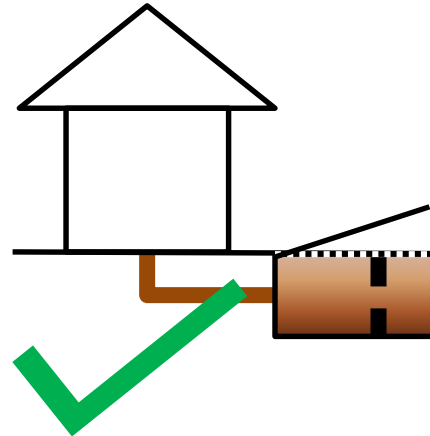
# Septic tank Construction. . .

# Where to place septic tank . . .

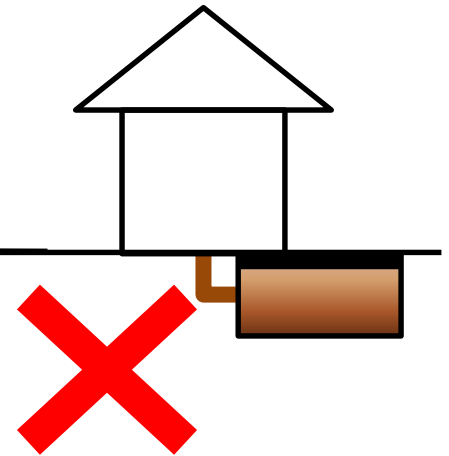
Septic tank and Soak pits away from water table



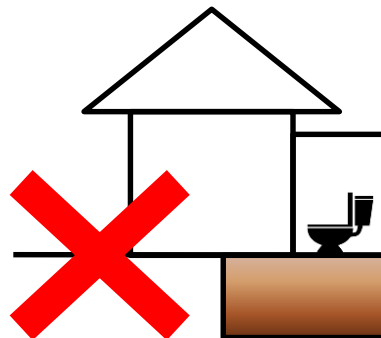
Away from building



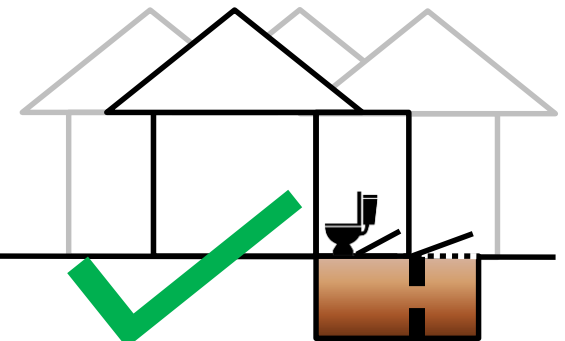
Do not seal from top and place under building



Do not build toilet over it

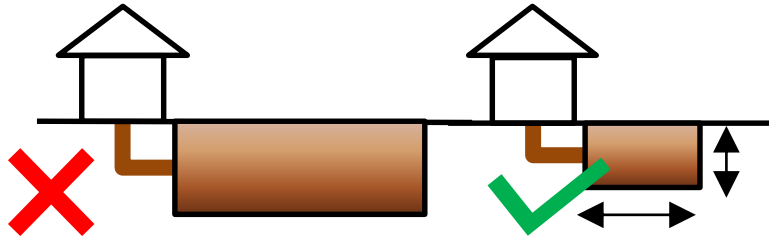


If space is restricted, build toilet over tank such that all chambers are accessible

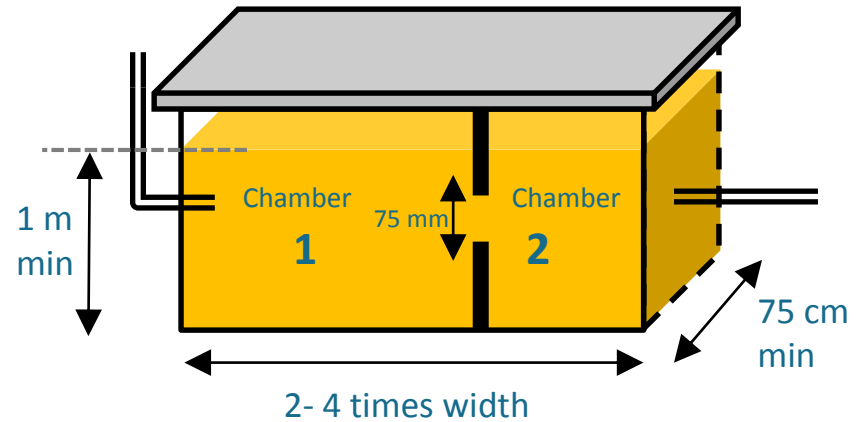


# Minimum size of septic tank. . .

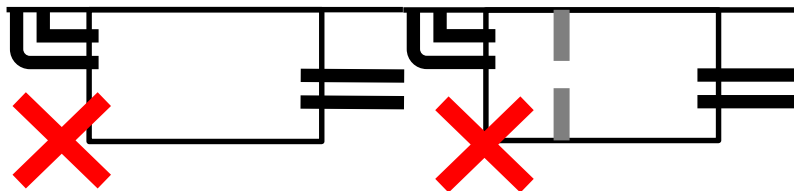
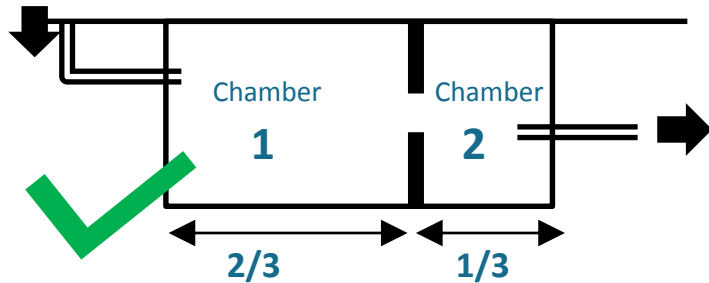
Do not build oversized septic tank



Size should be according to Nagarpalika rules



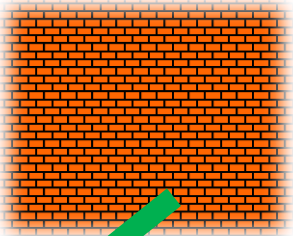
Preferably build 2 chambered tank with partition at 2/3 of length



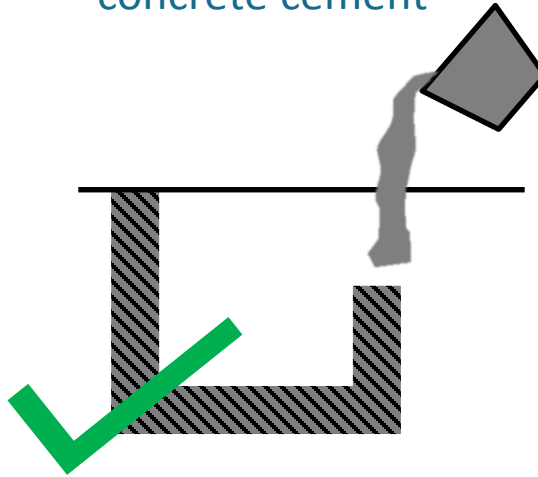
Number of users	Length (m)	Breadth (m)	Liquid Depth *	
			Cleaning in 2 years	Cleaning in 3 years
5	1.5	0.75	1.3	1.35
10	2	0.9	1.3	1.7
15	2	0.9	1.6	2.3
20	2.3	1.1	1.6	2.1
50	5	2	1.3	1.54
100	7.5	2.65	1.3	1.54
150	10	3	1.3	1.54
200	12	3.3	1.3	1.54
300	15	4	1.3	1.54

# Ideal materials for construction of septic tank . . .

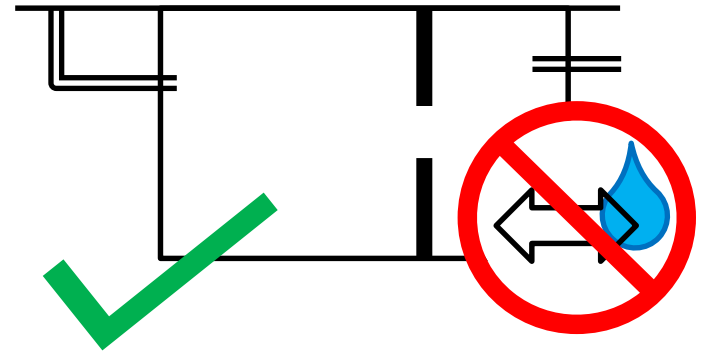
Brick work



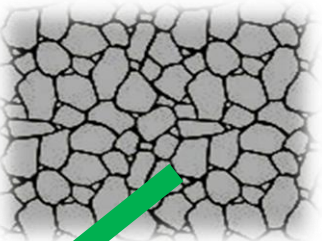
In-situ cast  
concrete cement



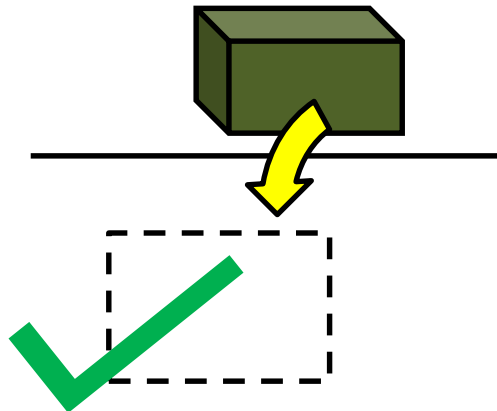
Water tight



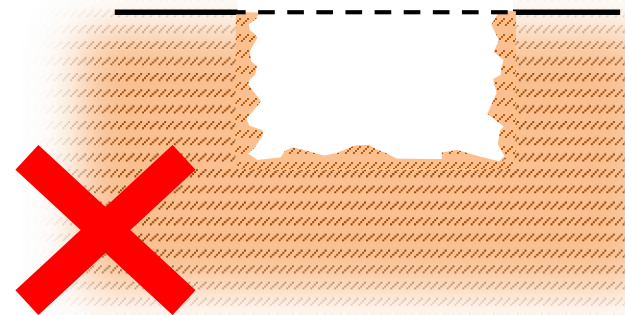
Stone Masonry



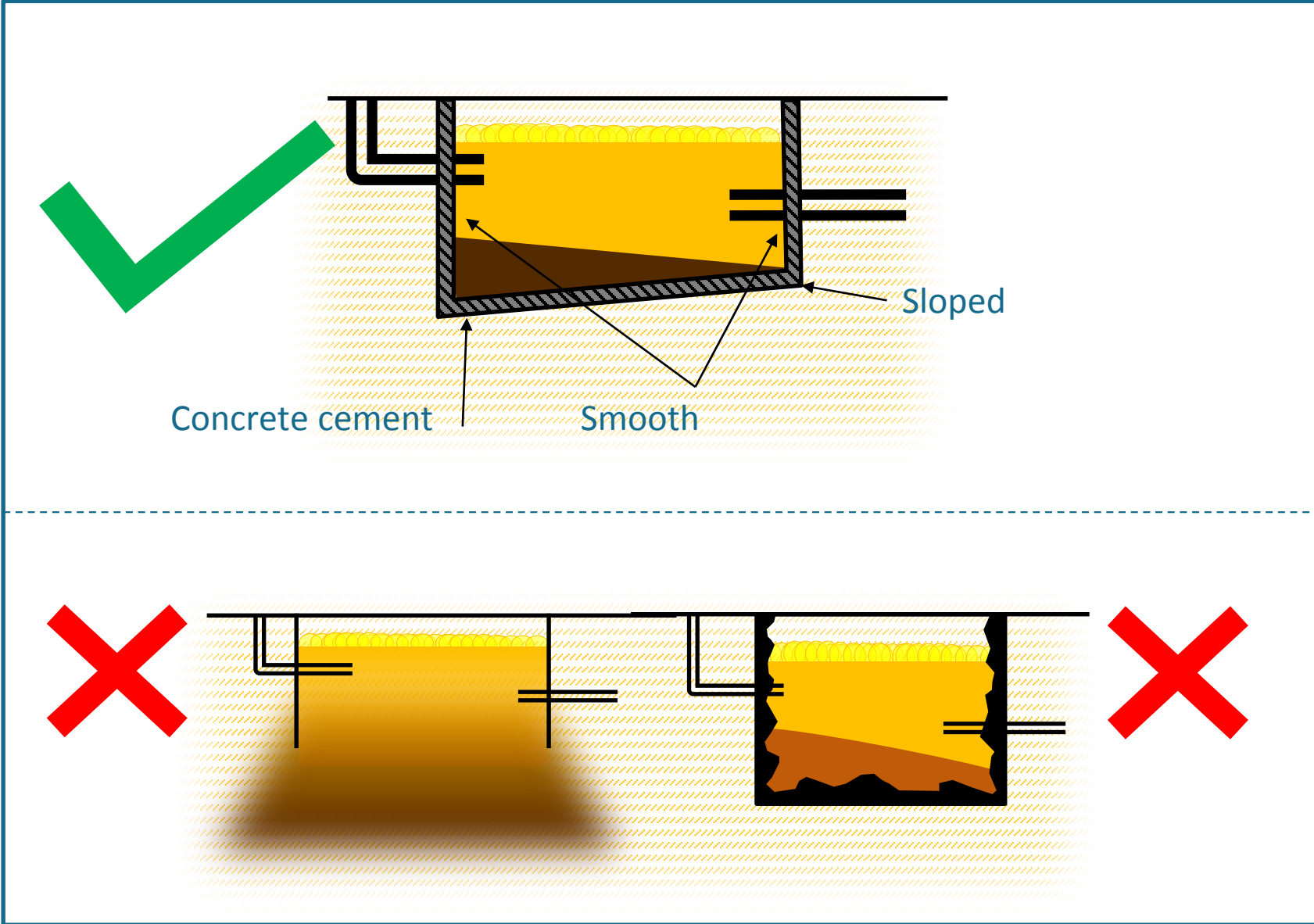
Pre cast cement,  
asbestos, HDPE



Do not use dug trench



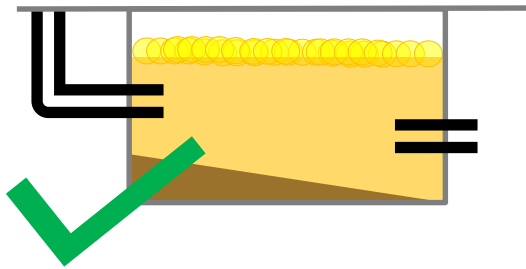
# Care to be taken while constructing base of septic tank. . .



Source: Development Control and Promotion for Municipal Councils and Nagar Panchayats in Maharashtra

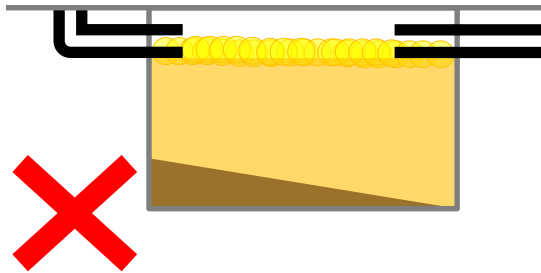
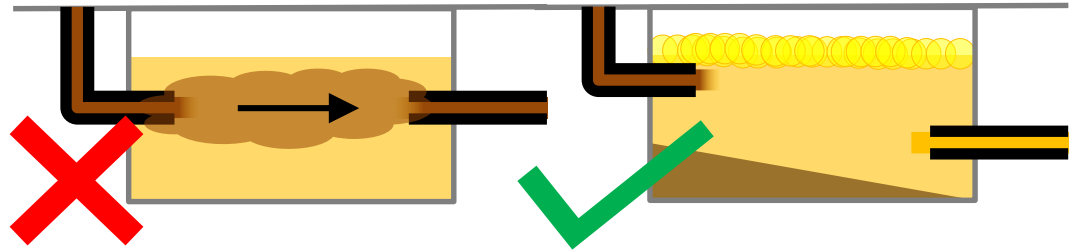
# Inlet and outlet levels. . .

Do not make inlet and outlet at scum or sludge level

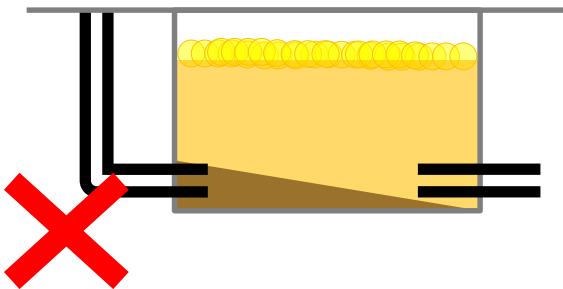
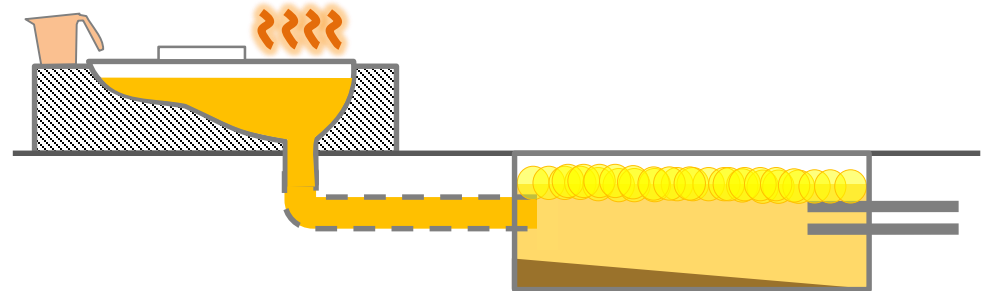


Do not make inlet and outlet at same level

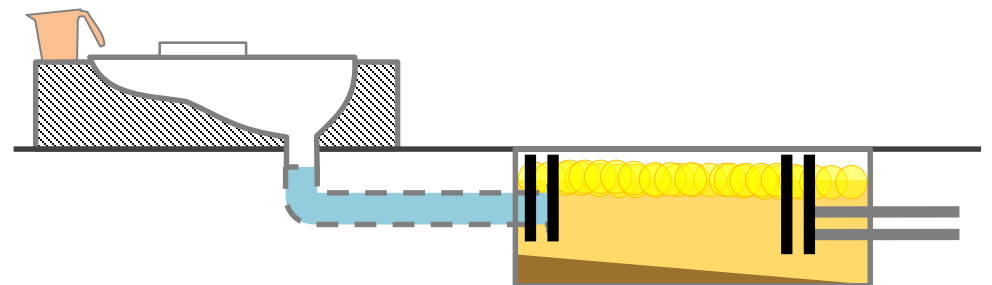
- It short circuits the flow and sludge does not settle



Do not make inlet and outlet pipes straight



Give baffles to prevent backflow of solids

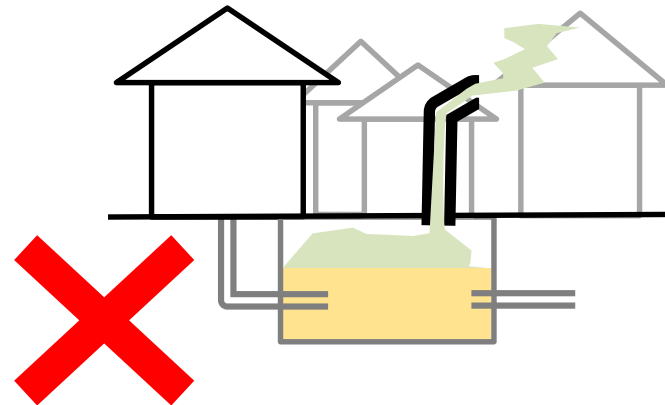
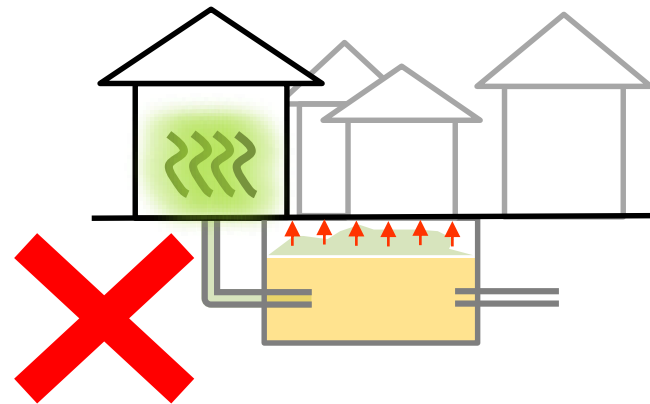
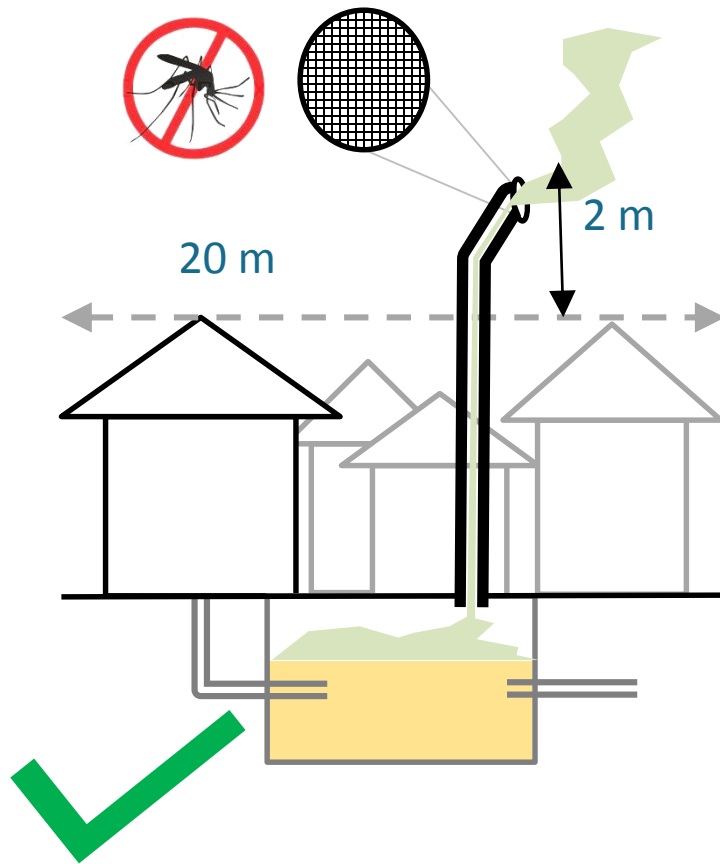


# Provision of ventilation pipe . . .

## Provide tall ventilation pipe for gas buildup

2 m higher than all buildings in 20m radius

Covered by mosquito netting

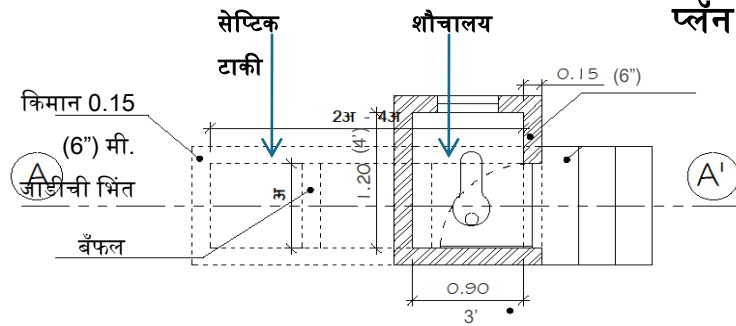




# Standard toilet & septic tank design. . .

# Toilet and septic tank design . . .

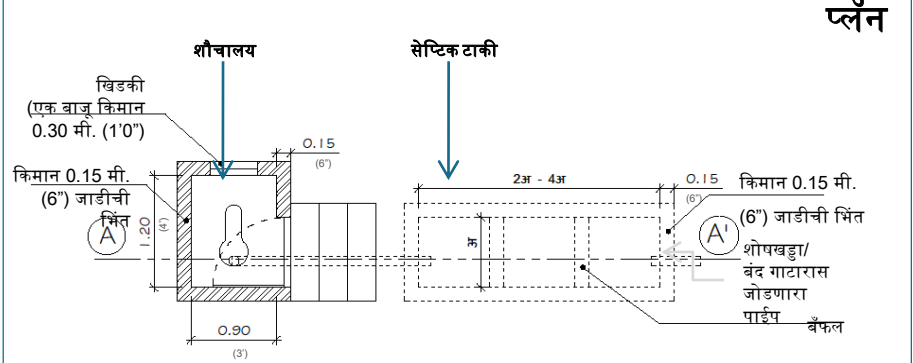
## पर्याय -1 शौचालयाखाली असणारी सेप्टिक टाकी



### टिप:

- सेप्टिक टाकी मधील किमान एक चॅबर उचळ्या जागेवर / कोणत्याही बांधकामाखाली नसावे. सेप्टिक टाकीची नियमित स्वच्छता करण्याकरिता टाकीला झाकणासहित दारे असावीत
- स्वतंत्र शौचालयाचा किमान आकारमान 0.9 मी. (3'0") X 1.2 मी. (4'0")

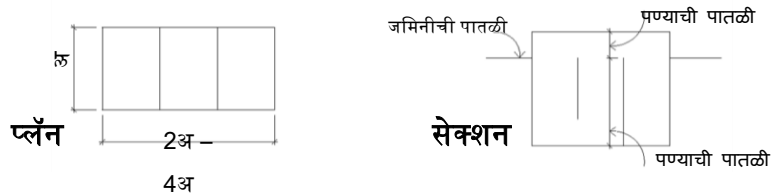
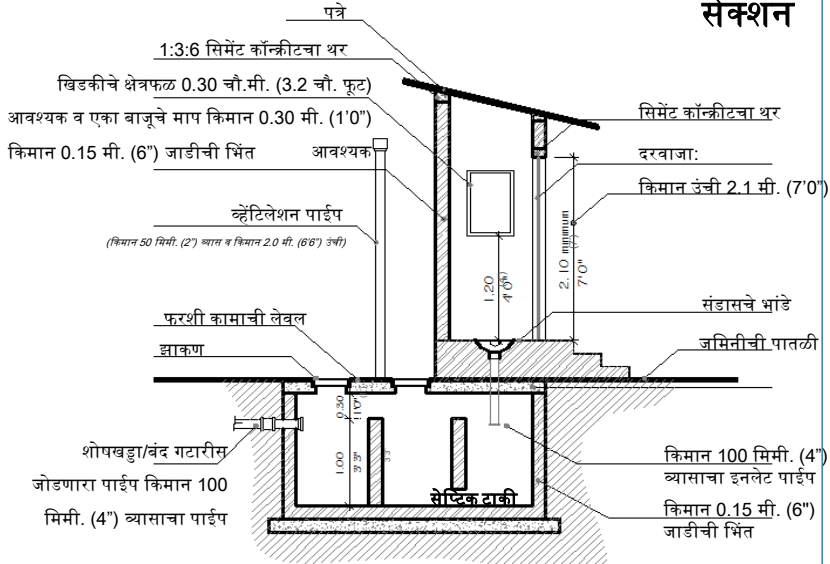
## पर्याय -2 शौचालयापासून काही अंतरावर असणारी सेप्टिक टाकी



### टिप:

- सेप्टिक टाकी मधील किमान एक चॅबर उचळ्या जागेवर / कोणत्याही बांधकामाखाली नसावे. सेप्टिक टाकीची नियमित स्वच्छता करण्याकरिता टाकीला झाकणासहित दारे असावीत
- स्वतंत्र शौचालयाचा किमान आकारमान 0.9 मी. (3'0") X 1.2 मी. (4'0")

## सेक्शन



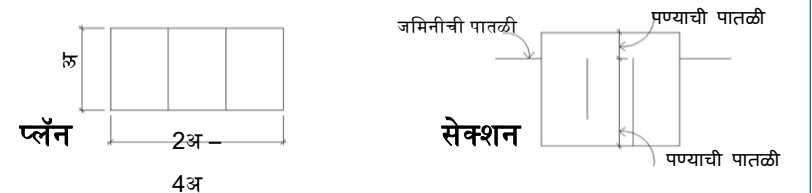
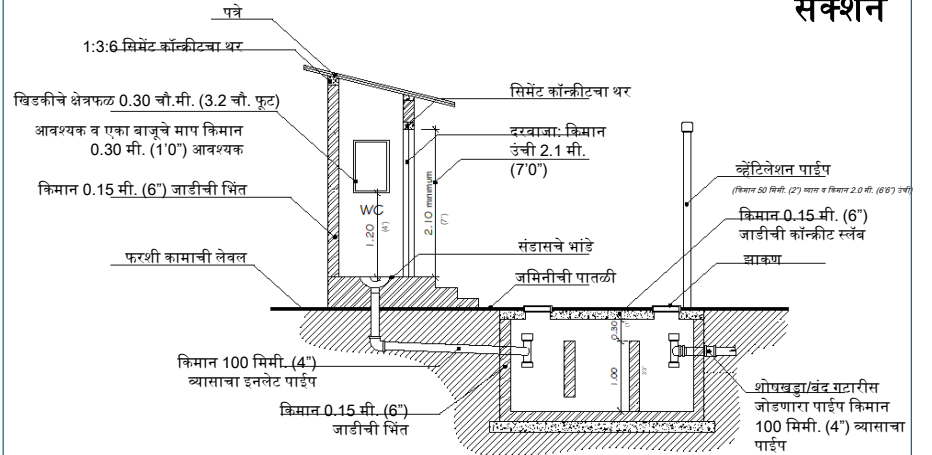
### सेप्टिक टाकीचे आकारमान:

- सेप्टिक टाकीची किमान रुंदी 0.75 मी. (2'5") व टाकीची लांबी ही रुंदीच्या 2 ते 4 पट असावी

### तपशील -

- टाकी मधील पण्याची पातळी किमान 1.0 मी. (3'3")
- पाण्याच्या पातळीवरील मोकळी जागा किमान 0.3 मी. (1'0")

## सेक्शन



### सेप्टिक टाकीचे आकारमान:

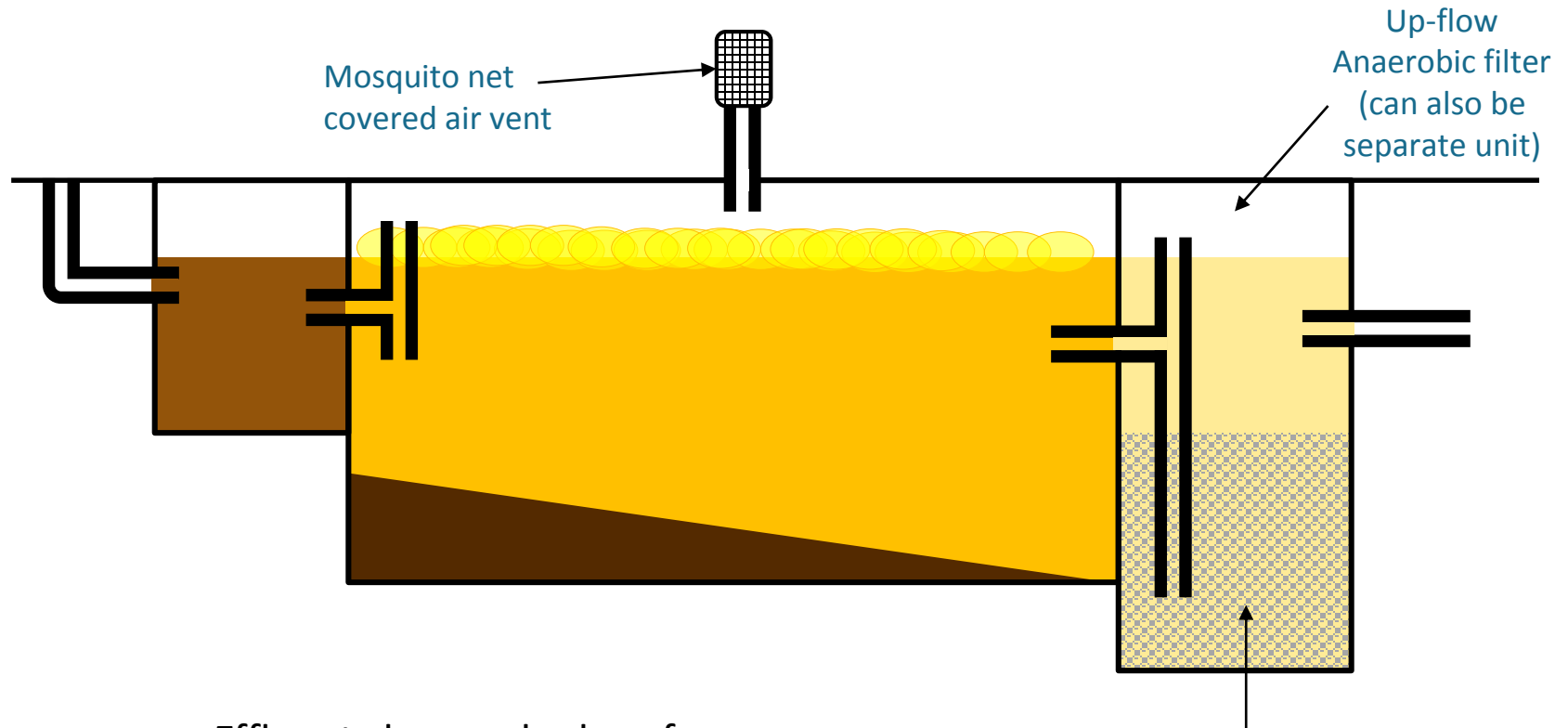
- सेप्टिक टाकीची किमान रुंदी 0.75 मी. (2'5") व टाकीची लांबी टाकी मधील पण्याची पातळी किमान 1.0 मी. (3'3") ही रुंदीच्या 2 ते 4 पट असावी.

### तपशील -

- पाण्याच्या पातळीवरील मोकळी जागा किमान 0.3 मी. (1'0")

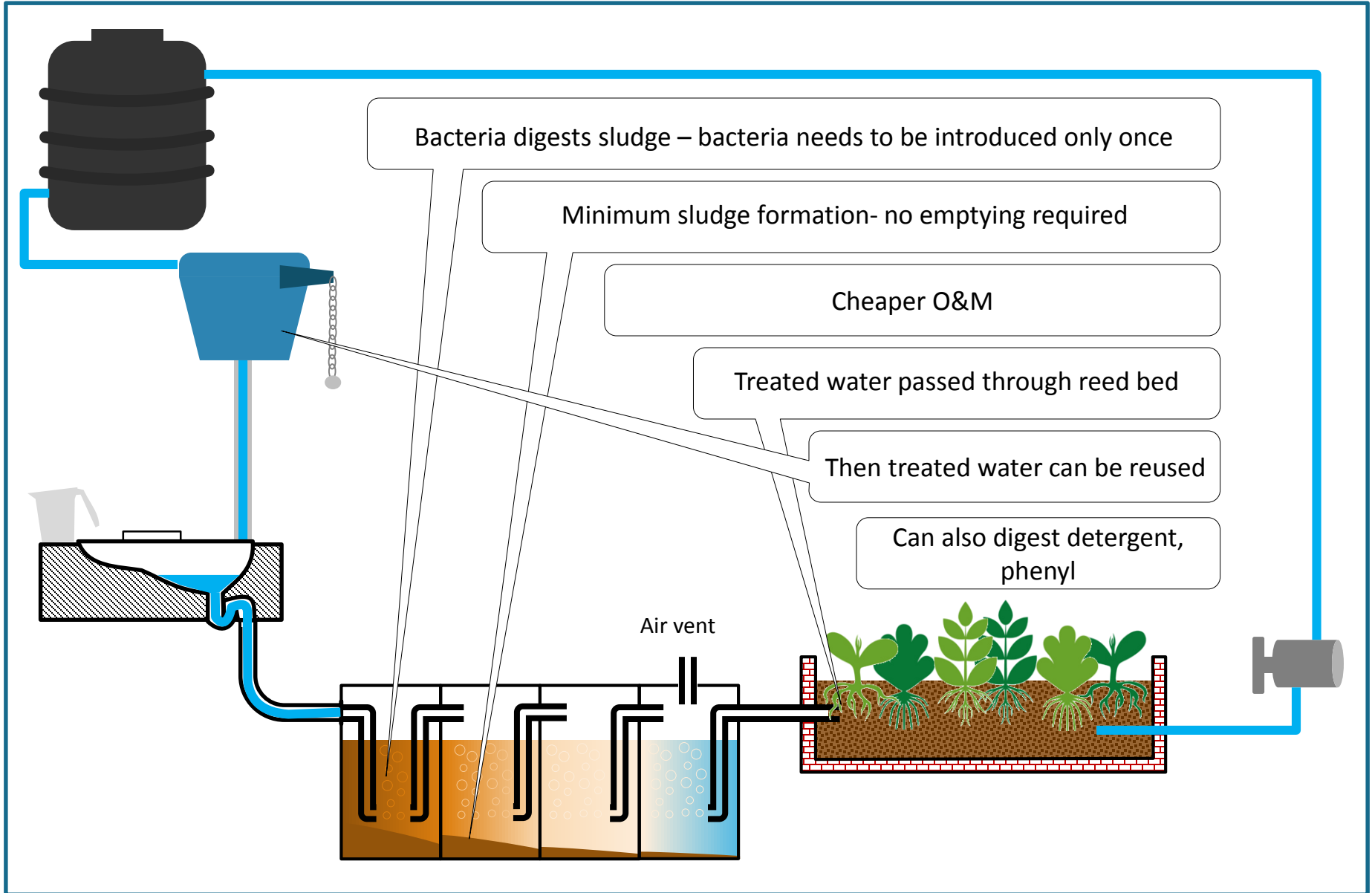
Other technology options...

# Improved septic tank



- Effluent clear and odour free
- Upto 70% BOD removals
- Microbial growth retained on the stone media - higher loading possible with efficient
- Digestion

# Anaerobic Bio digester with reed bed





*Any*  
**Questions**  
???

Thank you. . .