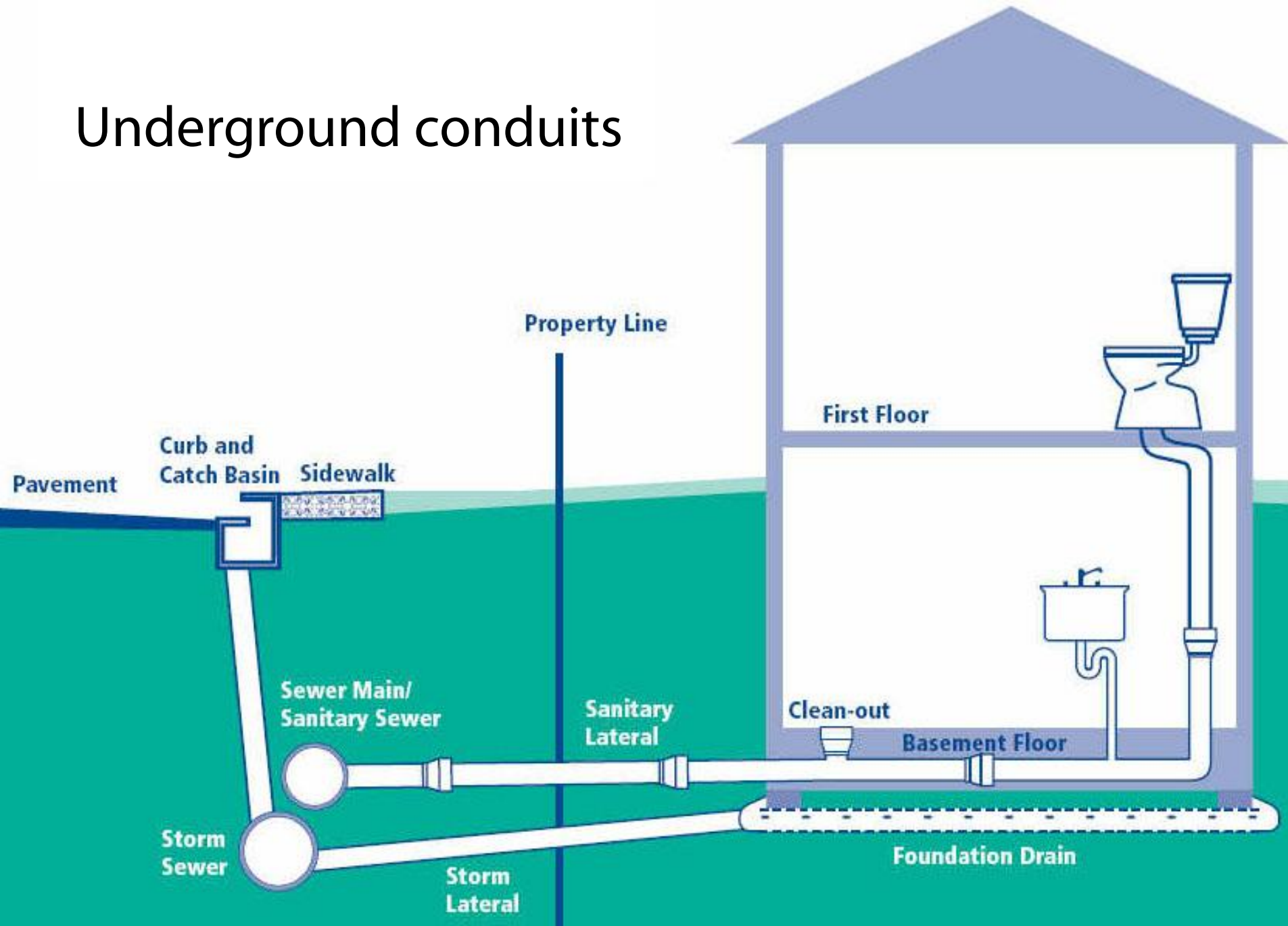


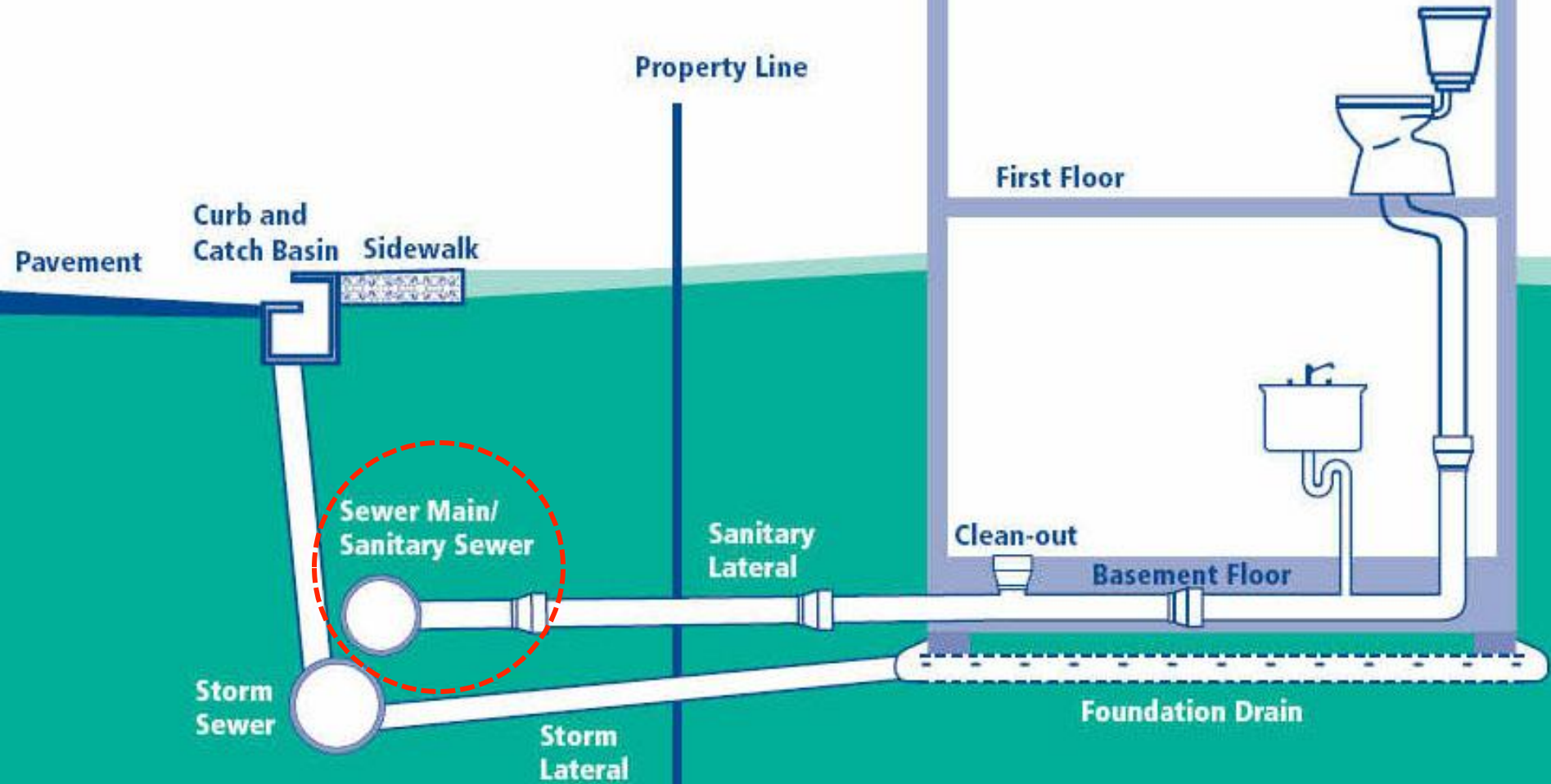
Sewer System

Underground conduits

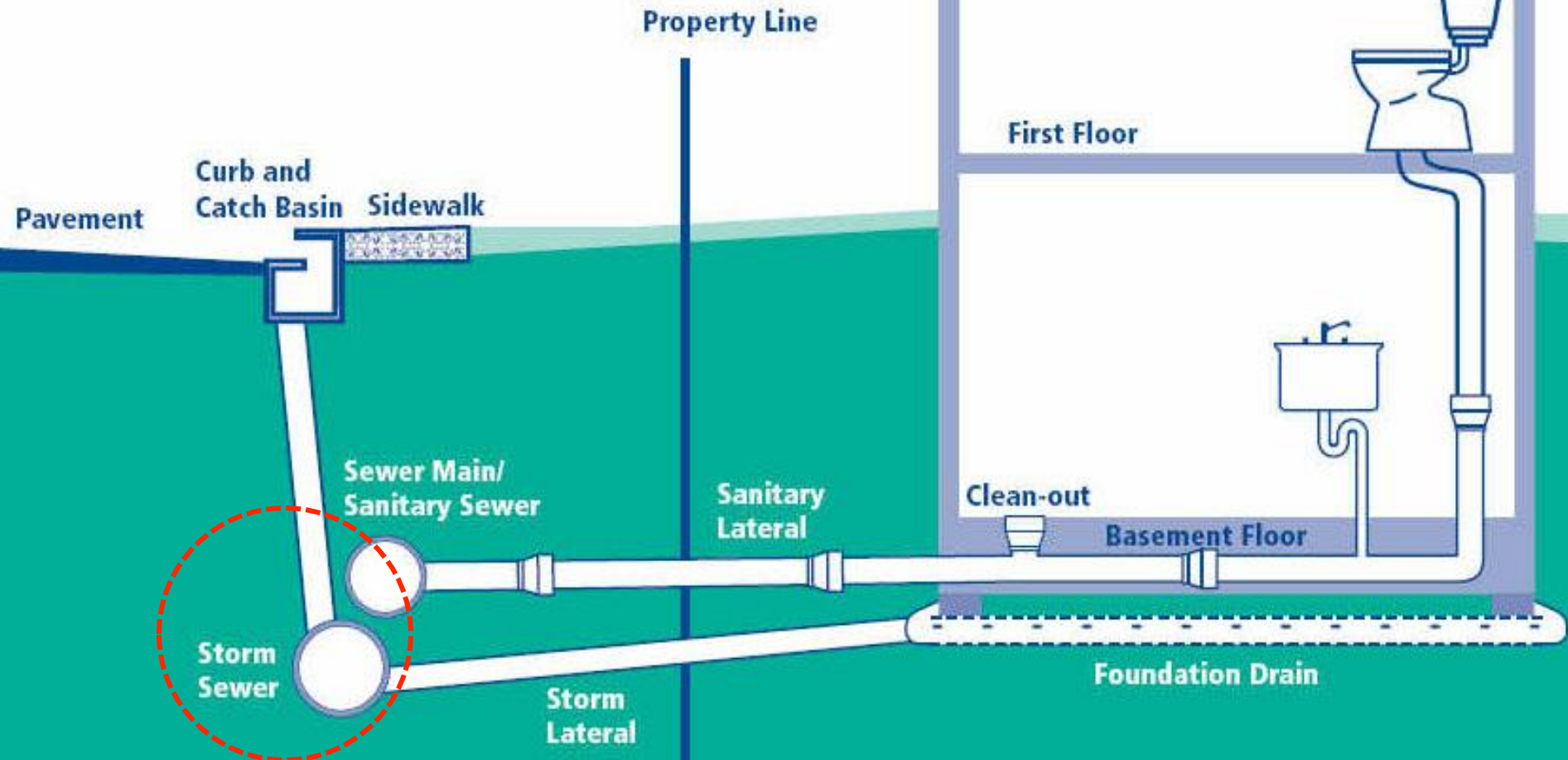


Underground conduits

Sewage to treatment plant



Underground conduits
Sewage to treatment plant
Storm water to water body



Open storm drain in Malaysia

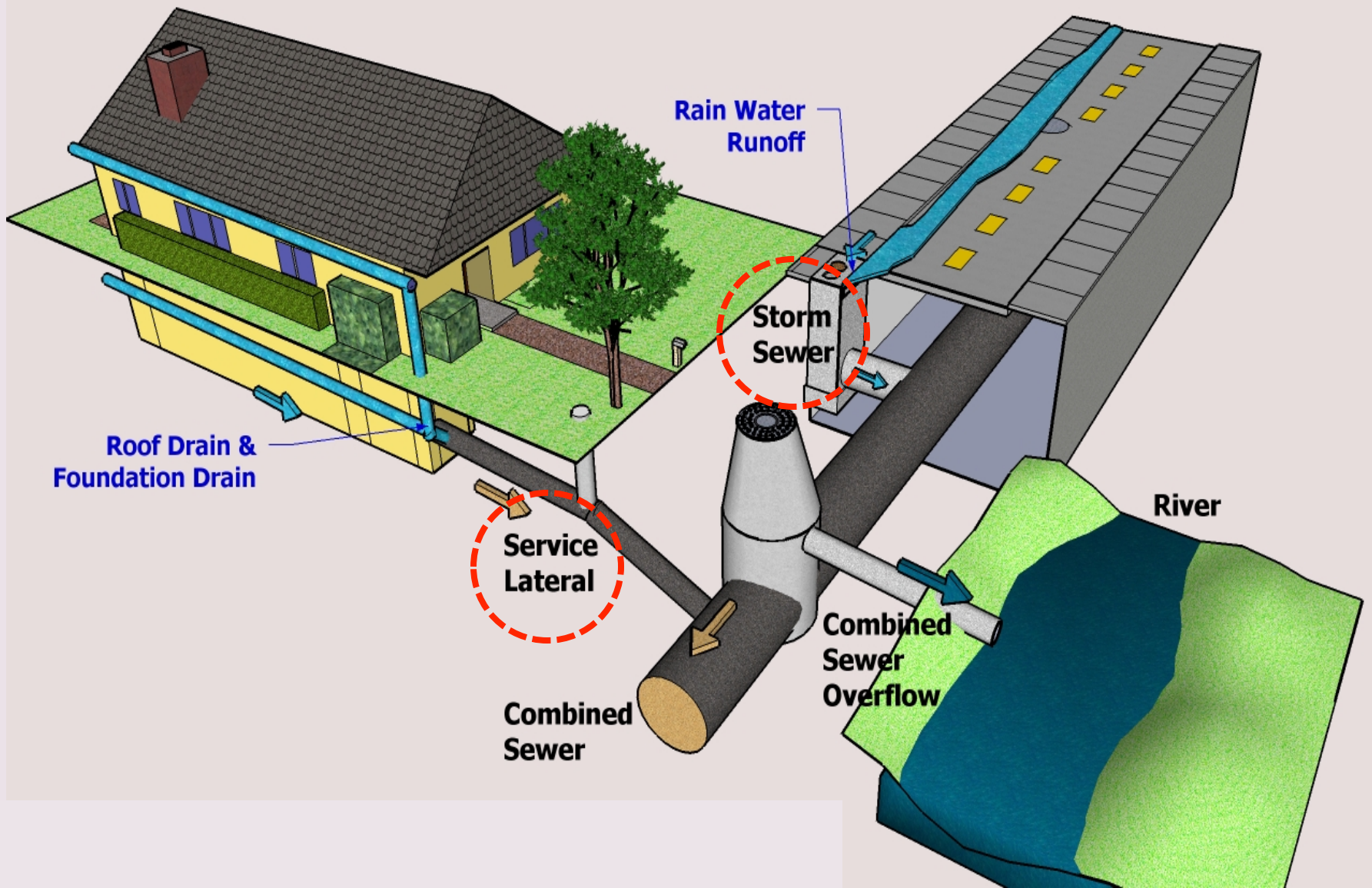


Type of Sewer System

Separate Sewer System

Combined Sewer System





Combined sewer system

A typical size of
combined sewer system





Manhole



Maintenance

Inspection

Cleaning of
sewers

Removal of
obstructions



Location

Every change in **direction**

Every change in **gradient**

Every change in **size** of sewer

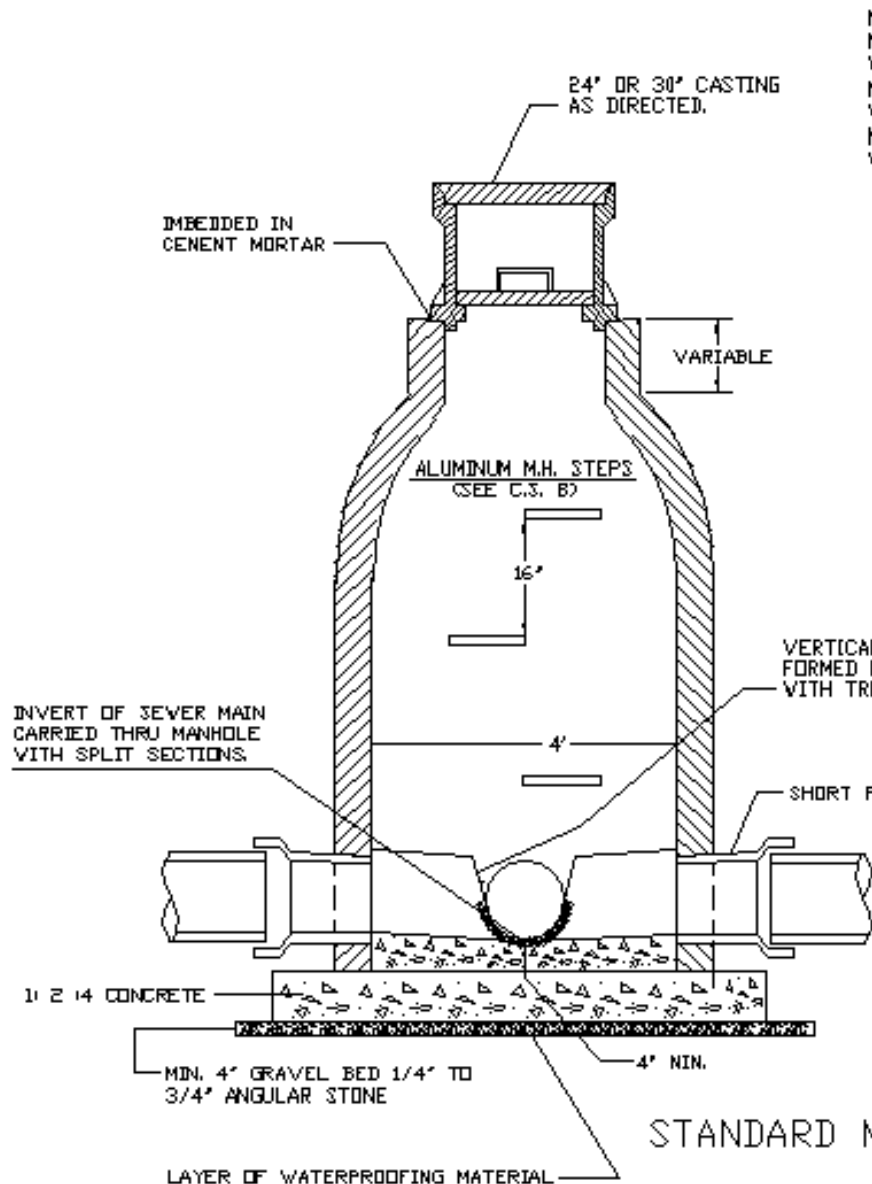
At **intersections** and **junctions**

“**Blockage-prone location**”

Location (straight)

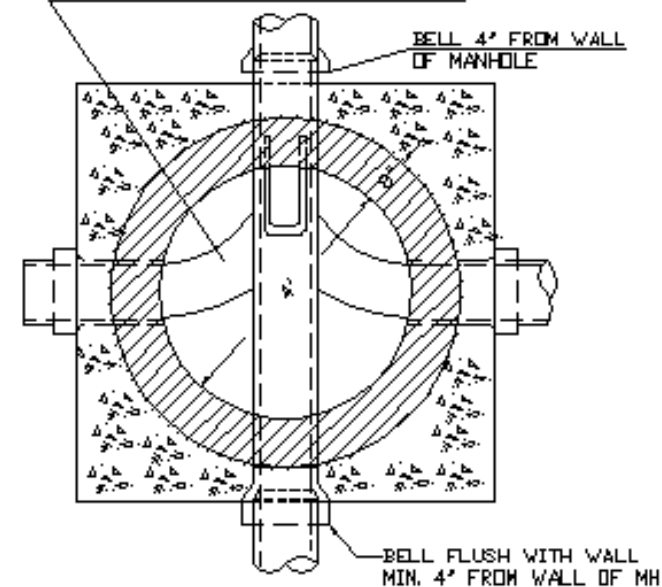
≥ 200 mm in diameter
Every about 100 m

≥ 450 mm in diameter
Every about 150 m



NOTE:
 MH'S 9' OR LESS IN DEPTH TO HAVE 8"
 WALL THICKNESS
 MH'S 8' TO 12' IN DEPTH TO HAVE 12"
 WALL THICKNESS
 MH'S 12' TO 16' IN DEPTH TO HAVE 16"
 WALL THICKNESS

CHANNELS OF TRIBUTARIES
 TO BE FORMED OUT OF BRICK
 AND IN A CONTINUOUS CURVE,
 SURFACED WITH CEMENT MORTAR.



HARD SOUND COMMON BRICK TO BE LAID IN 1-3 CEMENT MORTAR. SHOVED JOINTS NOT TO EXCEED 3/8" THICK. EXTERIOR FACES TO BE PLASTERED WITH 1-2 CEMENT MORTAR & BITUMINOUS COATING.

NO HAND-MIXED CONCRETE WILL BE ALLOWED ON THE JOB. ONLY READY MIXED 3500# CONCRETE WILL BE USED.

6' X 6' X 6' - CONC. FOOTING REQ'D. FOR DEPTH TO 6'-0"

8' X 8' X 8' - CONC. FOOTING REQ'D. FOR DEPTH OVER 8'-0"

STANDARD MANHOLE USING V.C.E.S. PIPE

NO SCALE



Needed if gravity flow not possible

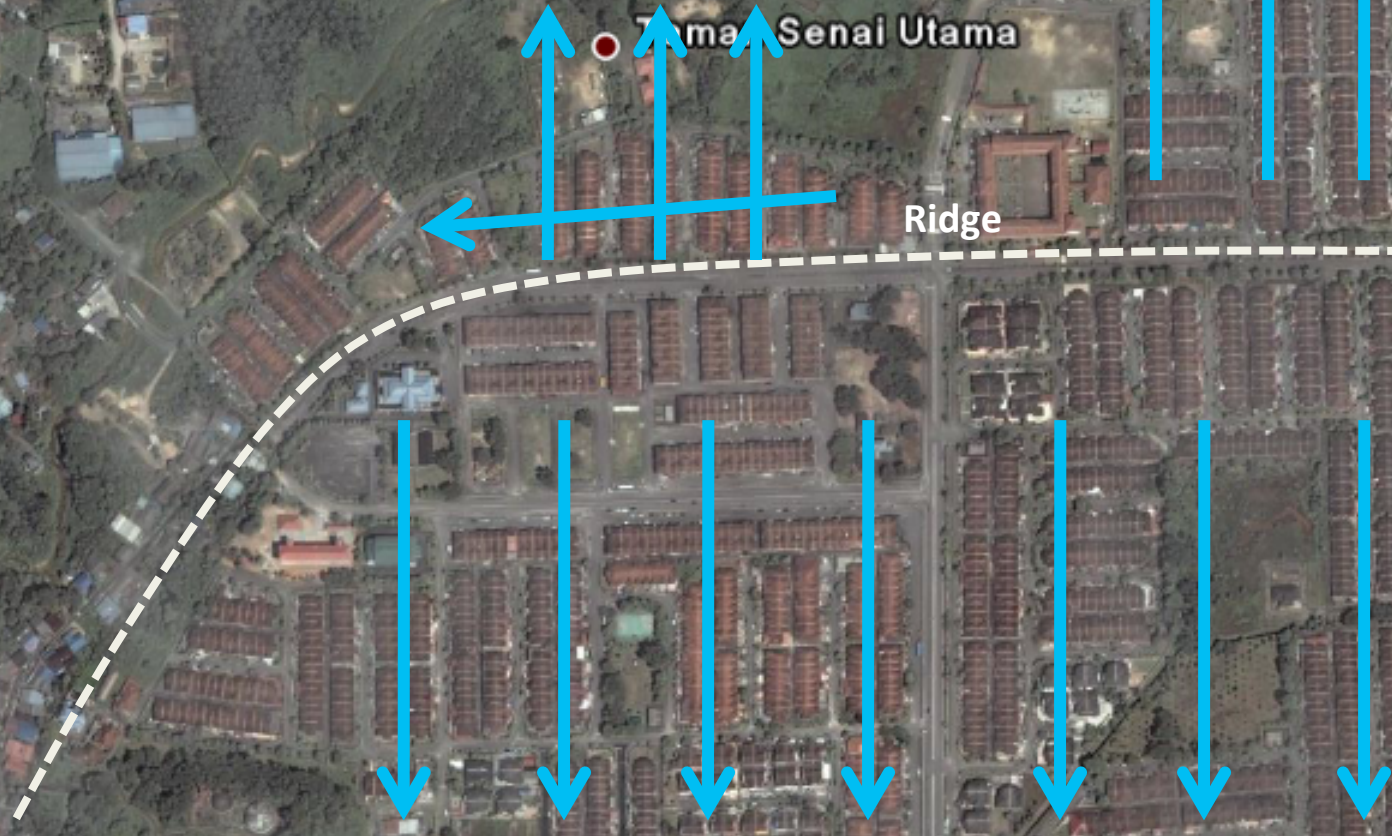
Construction, operation and
maintenance costs

Minimize!!!



Taman Senai Utama

Ridge



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Pointer 1°36'35.07" N 103°38'35.58" E elev 104 ft Streaming ||||| 100%

Eye alt 4503 ft

○ STP
○ Pumping station



● Taman Senai Utama

Ridge



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