

# Introduction



**Arina Sorokina**  
[sorokina.arina.sw@gmail.com](mailto:sorokina.arina.sw@gmail.com)  
[saxion.nl](http://www.saxion.nl)  
*Russian Academy of  
National Economy and  
Public Administration  
Real estate management*



**Zoë Kunst**  
477172@student.  
saxion.nl  
*Saxion Hogeschool  
Construction engineer*



**Denef Akarsu**  
484228@student.  
saxion.nl  
*Saxion Hogeschool  
Engineering*



**Sherzod Khoshimov**  
[hoshimovsher@gmail.com](mailto:hoshimovsher@gmail.com)  
*Moscow State University of  
Civil Engineering  
Development*

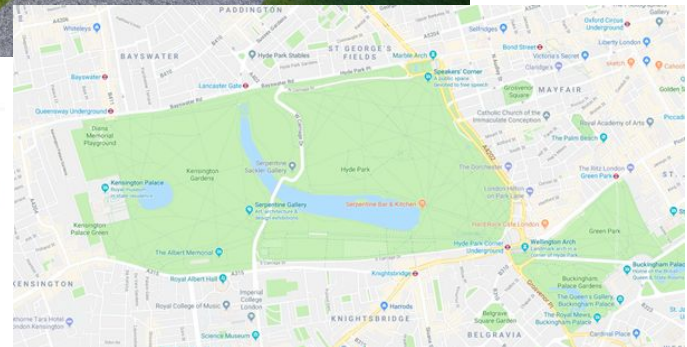


**Anastasia Prokopova**  
[anprok7734@gmail.com](mailto:anprok7734@gmail.com)  
*Moscow State University of Civil  
Engineering  
Architecture*



Hyde Park / Coordinates

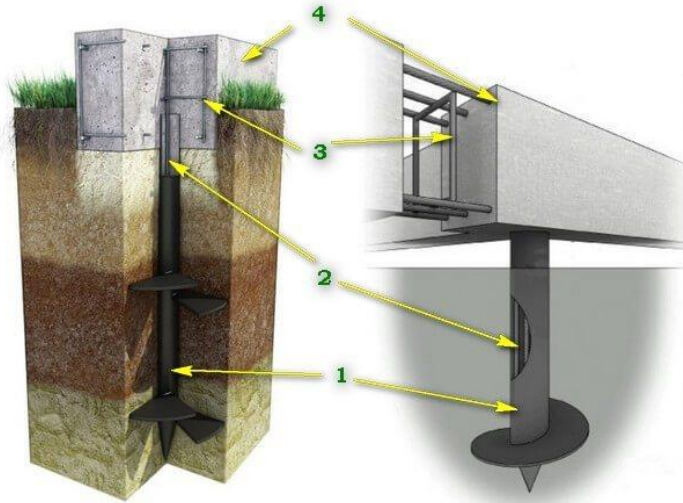
51.5073° N, 0.1657° W



# Methods of Construction

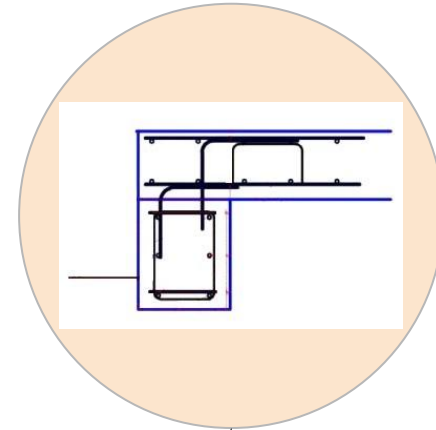
Selected Foundation: Steel screw piles with concrete grillage

Steel screw piles with grillage, which connects piles for working together



Initial ground survey indicates London Clay, high MPI, with allowable bearing capacity of 135kn/m<sup>2</sup>

reinforcement joint

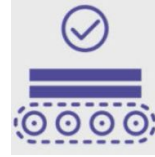
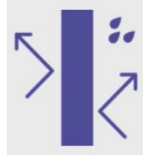


# External walls

Panel Construction System  
Structural insulated panels (SIPs)



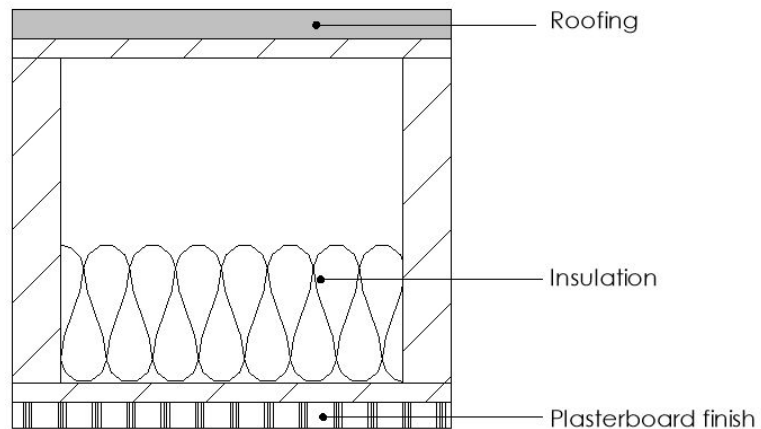
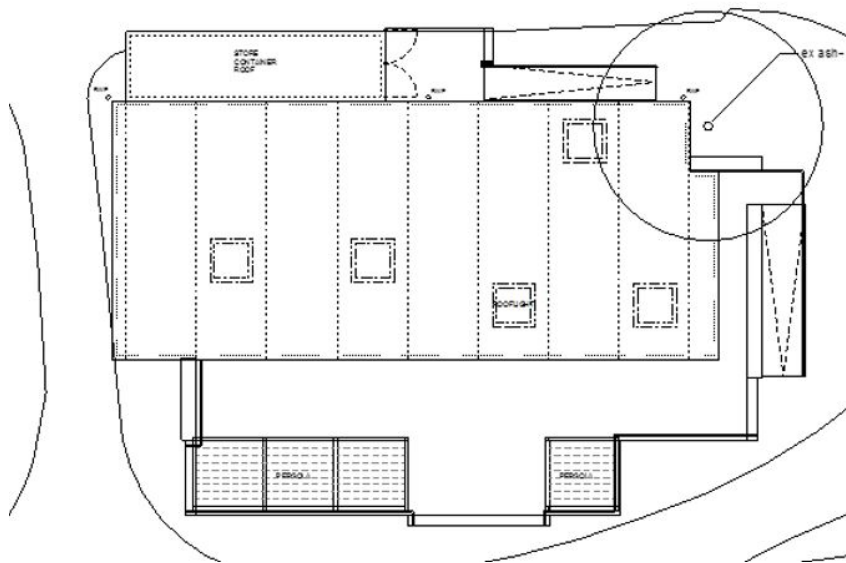
Advantages:



# Roof

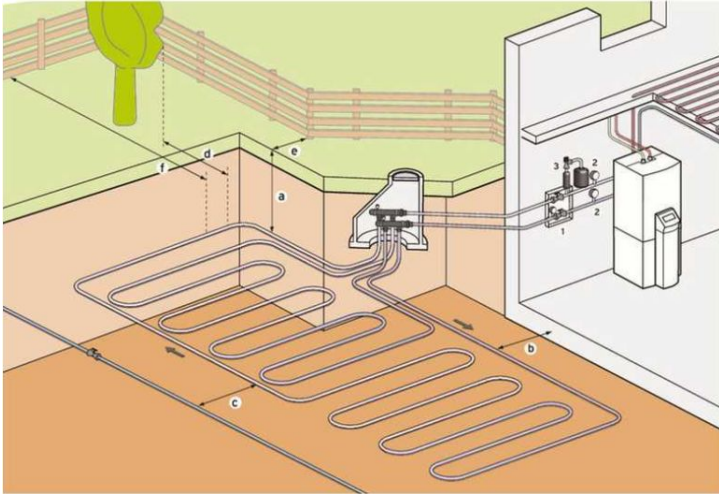
0.22 U value

ROOF LEVEL PLAN

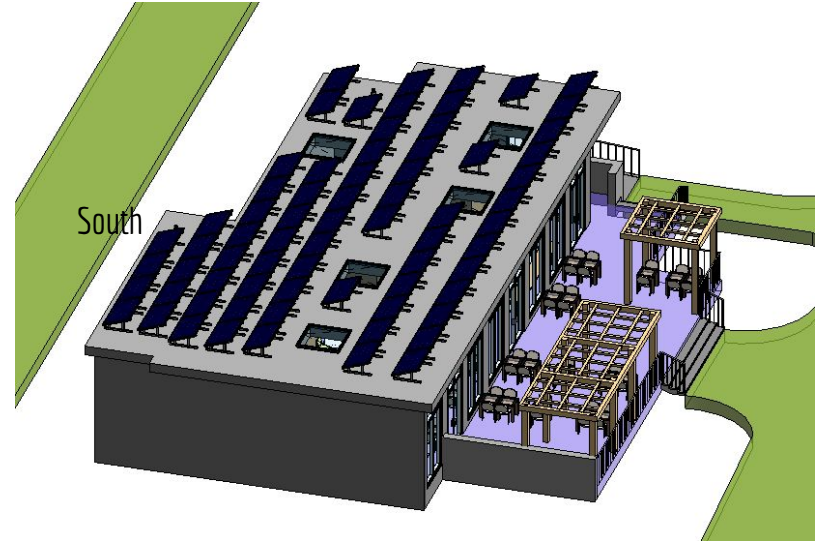


# HVAC

Energy efficient  
Green energy



Angle of 30 degree  
Panels face north  
260Wp



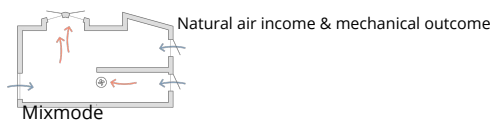
**Criterion 1: The calculated CO<sub>2</sub> emission rate for the building must not exceed the target**

CO <sub>2</sub> emission rate from the notional building, kgCO <sub>2</sub> /m <sup>2</sup> .annum	40.6
Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	40.6
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	40.5
Are emissions from the building less than or equal to the target?	BER <= TER
Are as built details the same as used in the BER calculations?	Separate submission

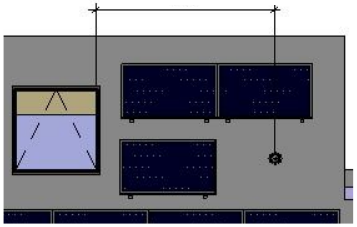
Building fabric

Element	U <sub>a</sub> -Limit	U <sub>a</sub> -Calc	U <sub>i</sub> -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.27	0.27	"Wall3586652"
Floor	0.25	0.25	0.25	"Wall3586654"
Roof	0.25	0.16	0.16	"Wall3586655"
Windows***, roof windows, and rooflights	2.2	3.43	3.43	"Window358498"
Personnel doors	2.2	0.81	0.81	"Door110834"

# HVAC



3088

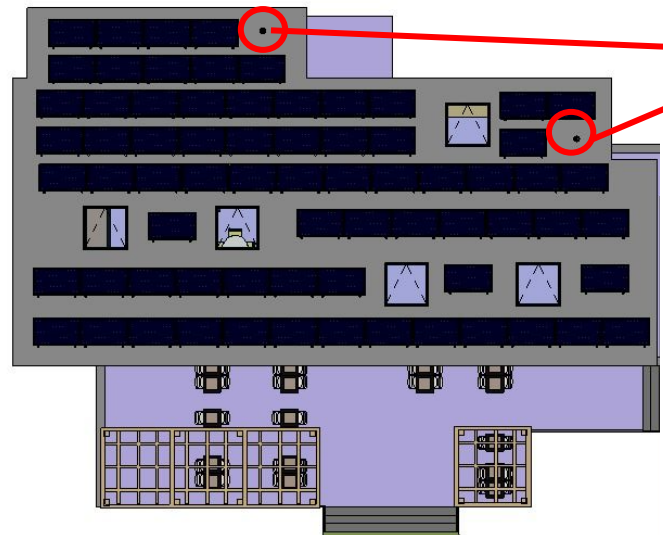
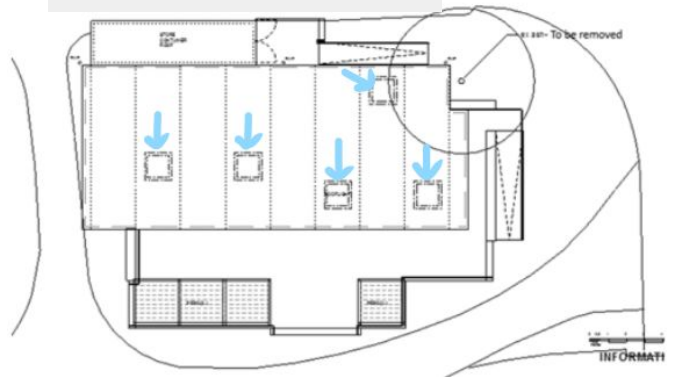


Distance between pipe and window

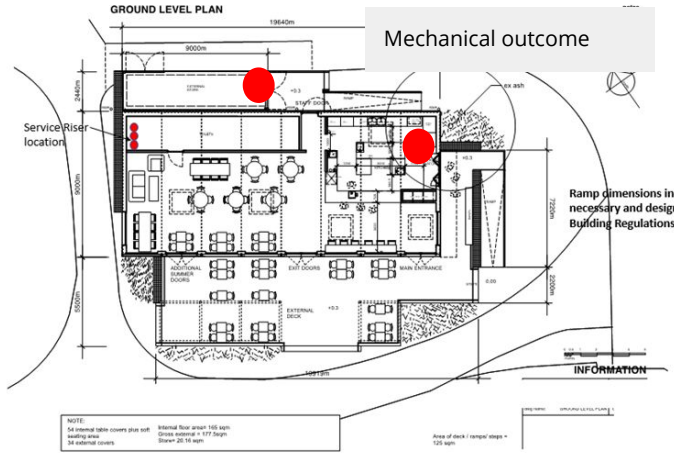
**Table 5.1a Extract ventilation rates**

Room	Intermittent extract
	Minimum rate
Kitchen	30 l/s adjacent to hob; or 60 l/s elsewhere
Utility room	30 l/s
Bathroom	15 l/s
Sanitary accommodation	6 l/s

Natural airincome through the roof

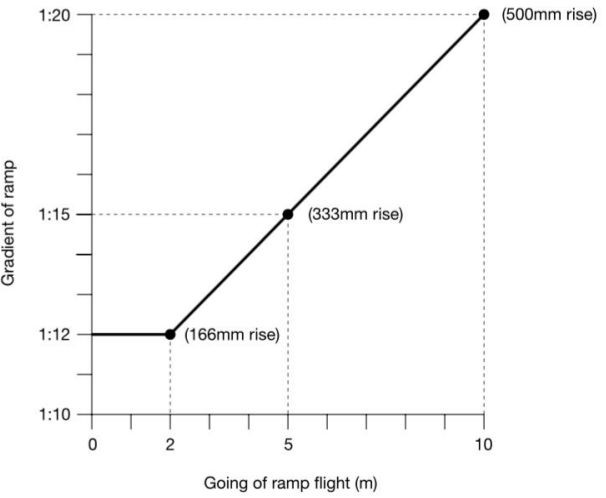


Exhaust air pipes  
Ø 125 mm

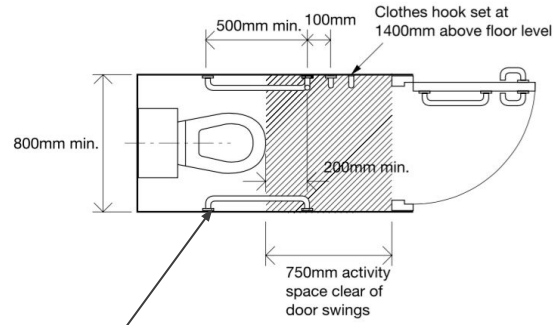
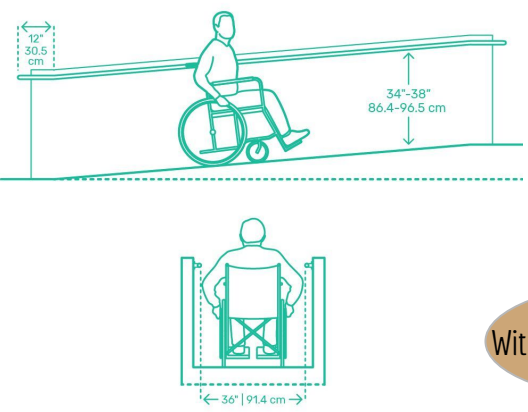
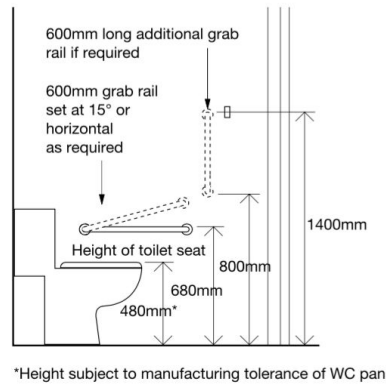


**“ Good passive design is critical to achieving a lifetime of thermal comfort, low energy bills and low greenhouse gas emissions ”  
(McGee, 2013)**

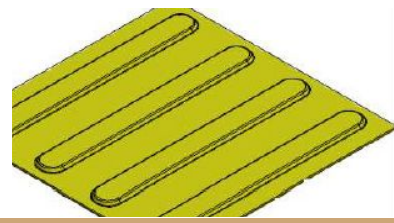
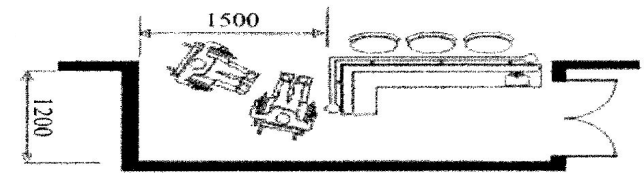
# Relationship of ramp gradient to the going of a flight



# Accessible design

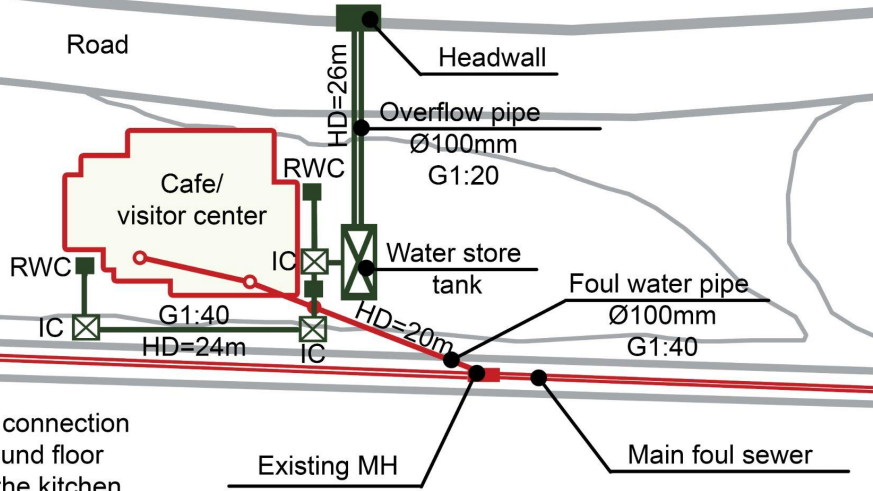


With a special nylon coating



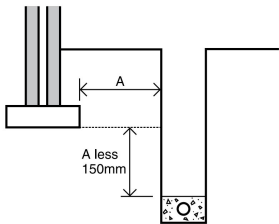
# Foul water drainage systems

## Separate drainage system The Serpentine

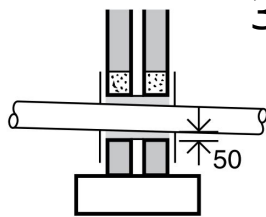


- - drainage connection from ground floor WC and the kitchen
- - a manhole on the foul water sewerage Ø 1000mm

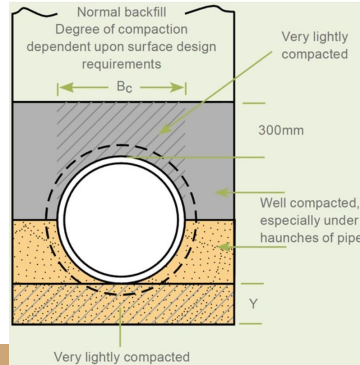
1.



2.



3.



## Calculations:

FRL=10.000m

IL1 = 8.500m

Fall =  $G \cdot HD = 1/40 \cdot 20 = 0.5m$

IL2 = IL1 + Fall = 8.500 + 0.5 = 9.000m

Pipe diameter = 100 mm

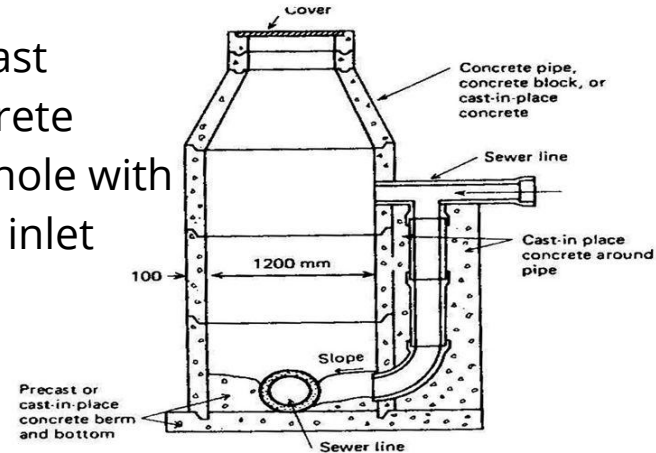
Horizontal distance is 20.000m

The Gradient is 1 in 40 (Gradient is the measure of the steepness of a straight line) AD H1

Under pipe bedding = 100mm

**Underground concrete pipes BS 5911**  
max capacity 9.3 litres/sec

## Precast concrete manhole with drop inlet

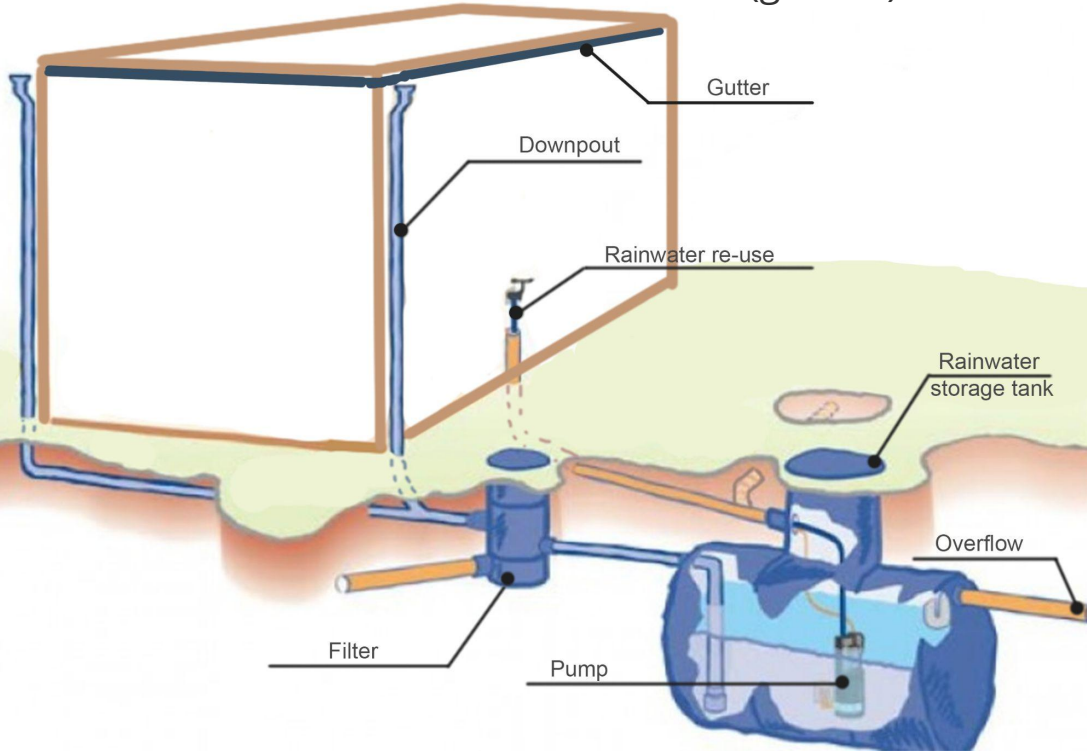




# Rainwater water drainage system

Underground rainwater collection tank

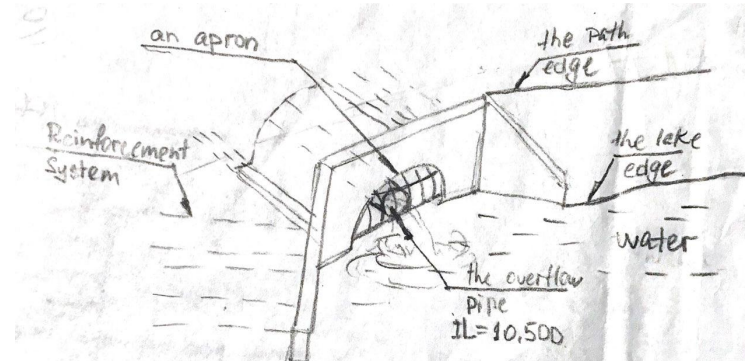
Total Rainwater Collection Potential (gallons): 66 000.01



The way it works

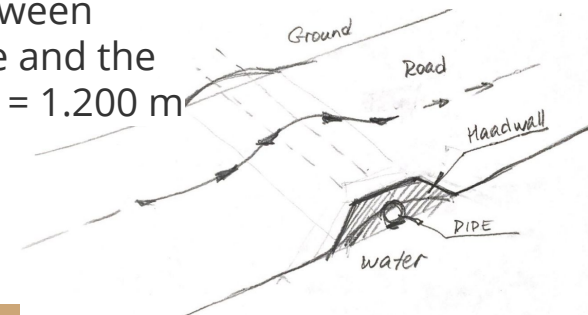
capture → filter → pump

## Headwall



Headwall invert level = 10.050

Fall between the lake and the ground = 1.200 m



THANK YOU FOR YOUR ATTENTION!

Q&A SESSION