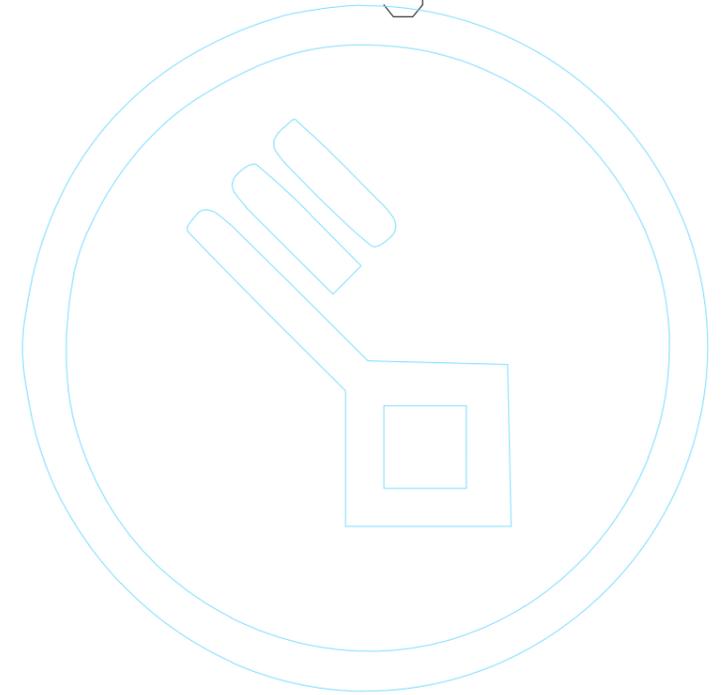


Table of Content	
Sheet #	Contents
1	Greywater Treatment Plant Layout in Harir
2	Greywater Treatment Plant in Harir Top View
3	Greywater Treatment Plant in Harir Longitudinal View Cross Section (A)
4	Grease Trap+ Settler + Aerobic filter Cross Sections(B,C,D)
5	Filter Media Support Frame Details and Compost Pit
6	Greywater Treatment Plant Reinforcement Details

Republic Of Iraq - Kurdistan Region

PREPARATION OF DETAILED ENGINEERING DESIGN WASTEWATER TREATMENT FACILITIES OF



BORDA

Greywater Treatment System In Harir

Year 2025

WEST AND CENTRAL ASIA

CONSTRUCTION DRAWING OF DEWATS

GREYWATER TREATMENT PLANT IN HARIR

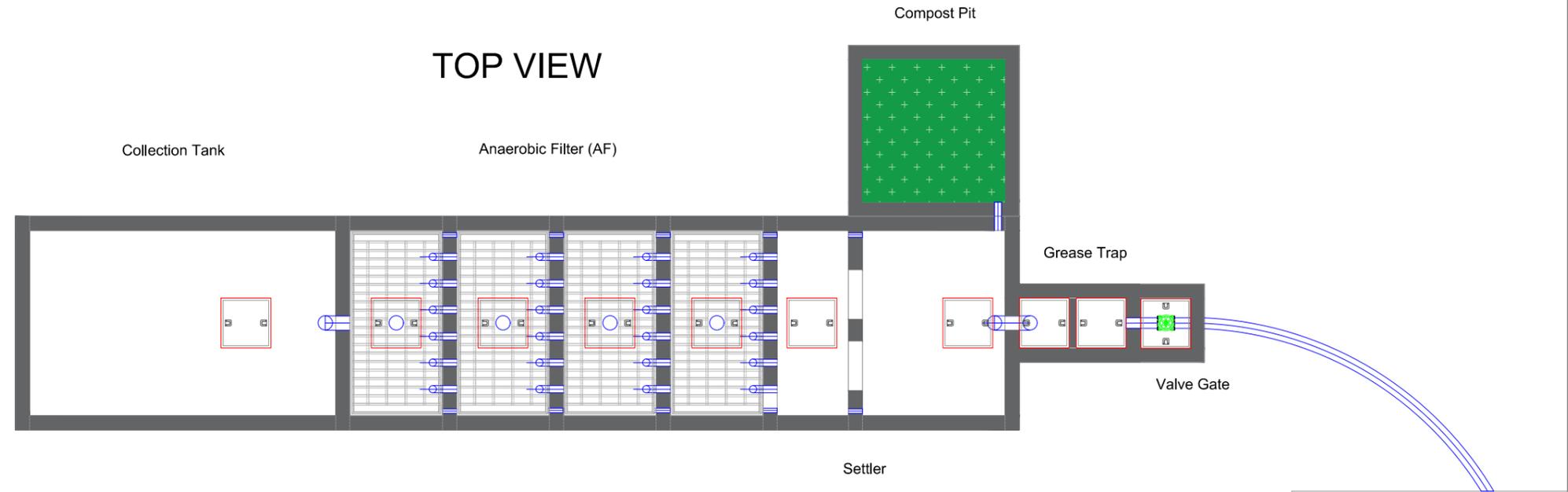
- CONCRETE MIX (1:2:2) AND MORTAR MIX (1:1) FOR ALL PARTS.
- PLASTER 25mm INSIDE & OUTSIDE OF WALLS (SYSTEM AND MIXED WATER PROOF POWDER).
- THE (NATURAL GROUND LINE FROM MODULE A SERVES AS THE REFERENCE LINE (0,0) FOR ALL MODULES OF DEWATS. FROM 0,0 ELEVATION, FREEBOARD MUST BE ADJUSTED TO COPE WITH THE WATER ELEVATION INSIDE THE DEWATS MODULES. WATER ELEVATION IN MODULES MUST STRICTLY BE FOLLOWED TO AVOID BACKFLOW AND AFFECT TREATMENT EFFICIENCY OF DEWATS.
- PROVIDE A WORKING DISTANCE OF AT LEAST 50-80CM ALLOWANCE FROM WALL DURING EXCAVATION.
- THE ELEVATION OF THE INLET PIPES IN EACH MODULE MAY CHANGE ACCORDING TO ACTUAL ELEVATIONS DURING CONSTRUCTION. AIR SPACE CAN BE CHANGED, BUT THE WATER DEPTH MUST BE FOLLOWED AS SPECIFIED IN THE PLAN.
- GRAVEL BED MUST BE WELL-COMPACTED. THICKNESS OF GRAVEL BED MAY VARY DEPENDING ON SOIL TYPE.
- PROVIDE 4" VENT PIPE ONE IN SETTLER AND ONE IN ABR ACCORDING TO THE SITE IN A PLACE THAT SHOULD NOT LOOK BAD AND IT SHOULD BE 1m HIGHER THAN BUILDING.
- DEWATS SHAPES CAN BE ADJUSTED ACCORDING TO THE SITE IN COORDINATION WITH SW ENGINEERS.
- THIS IS THE PROPERTY OF SW & IS NOT TO BE COPIED OR PRODUCED ANYWHERE WITHOUT THEIR PERMISSION.

DEWATS DRAWING

DESIGN & DRAWN BY :
Eng: ALEND M. MAHDI
Eng: SAMAN KHALIL



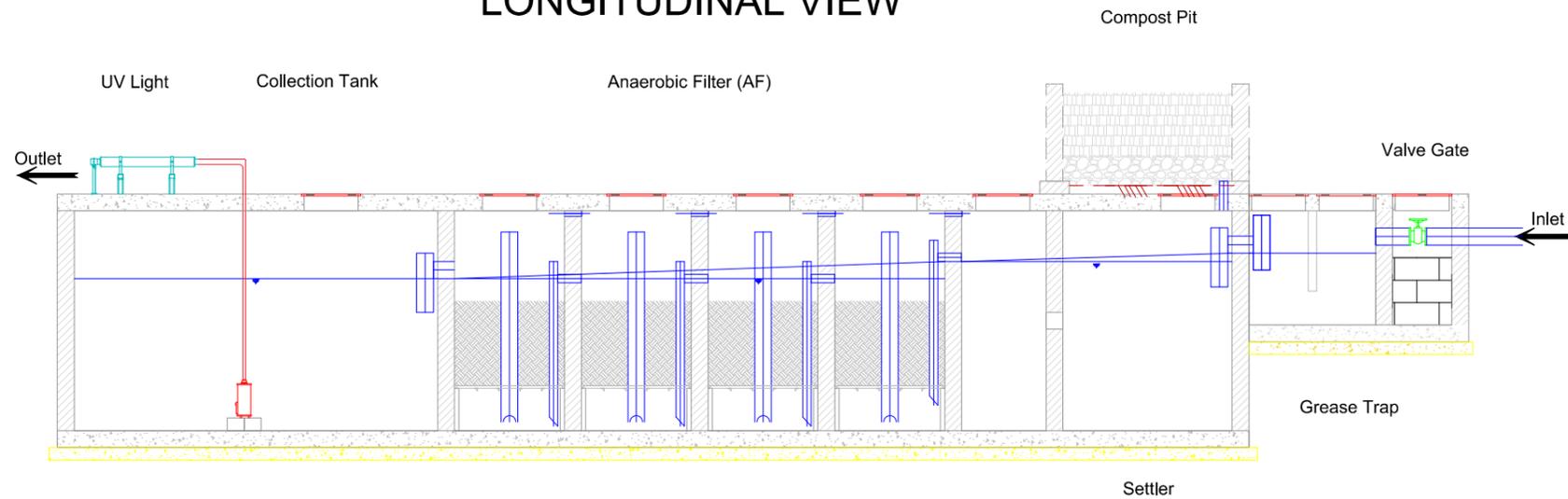
TOP VIEW



NATURAL WASTEWATER CHANNEL

CONCRETE WASTEWATER CHANNEL

LONGITUDINAL VIEW



Note: All dimensions are in cm

Page:
(1/6)

GREYWATER TREATMENT PLANT LAYOUT

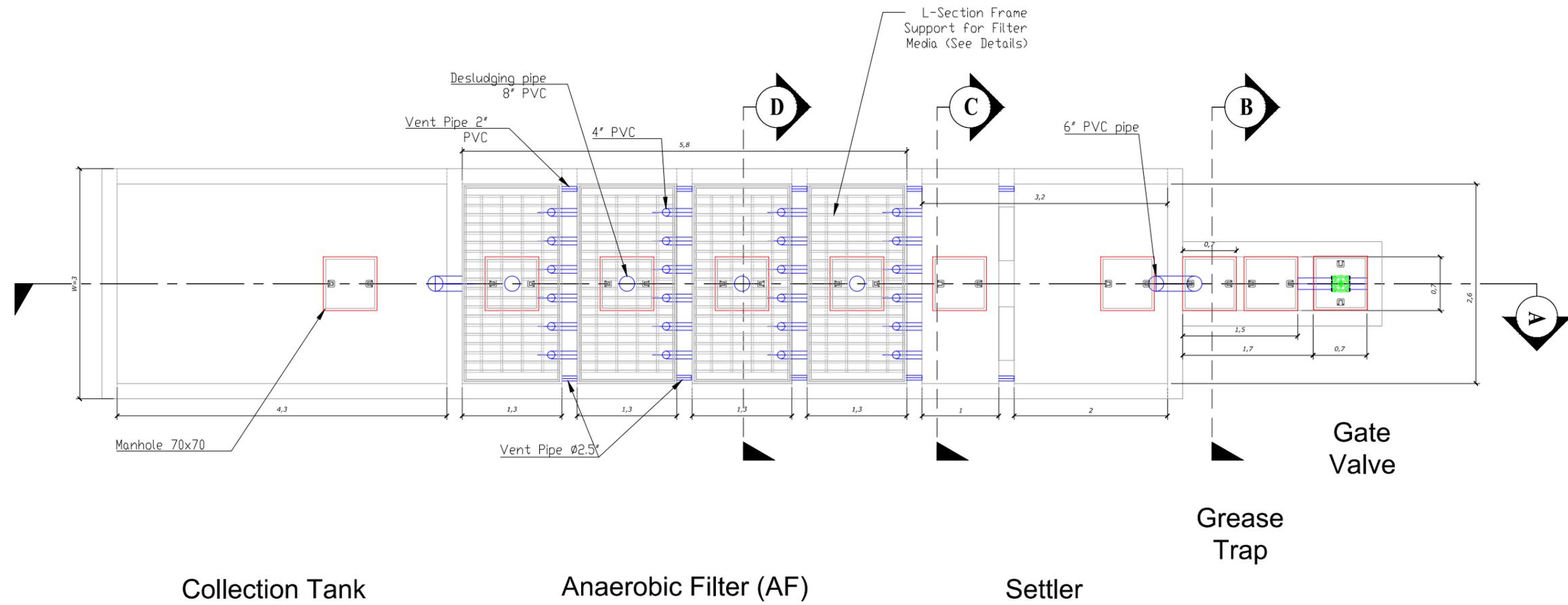
GREYWATER TREATMENT SYSTEM DRAWING

DESIGN & DRAWN BY :
Eng: ALEND M. MAHDI
Eng: SAMAN KHALIL

- CONCRETE MIX (1:2:2) AND MORTAR MIX (1:1) FOR ALL PARTS.
- PLASTER 25mm INSIDE & OUTSIDE OF WALLS (SYSTEM AND MIXED WATER PROOF POWDER).
- THE (NGL) NATURAL GROUND LINE FROM MODULE A SERVES AS THE REFERENCE LINE (0,0) FOR ALL MODULES OF DEWATS. FROM 0,0 ELEVATION, FREEBOARD MUST BE ADJUSTED TO COPE WITH THE WATER ELEVATION INSIDE THE DEWATS MODULES. WATER ELEVATION IN MODULES MUST STRICTLY BE FOLLOWED TO AVOID BACKFLOW AND AFFECT TREATMENT EFFICIENCY OF DEWATS.
- PROVIDE A WORKING DISTANCE OF AT LEAST 50-80CM ALLOWANCE FROM WALL DURING EXCAVATION.
- THE ELEVATION OF THE INLET PIPES IN EACH MODULE MAY CHANGE ACCORDING TO ACTUAL ELEVATIONS DURING CONSTRUCTION. AIR SPACE CAN BE CHANGED, BUT THE WATER DEPTH MUST BE FOLLOWED AS SPECIFIED IN THE PLAN.
- GRAVEL BED MUST BE WELL-COMPACTED. THICKNESS OF GRAVEL BED MAY VARY DEPENDING ON SOIL TYPE.
- PROVIDE 4 VENT PIPE ONE IN SETTLER AND ONE IN ABR ACCORDING TO THE SITE IN A PLACE THAT SHOULD NOT LOOK BAD AND IT SHOULD BE 1m HIGHER THAN BUILDING.
- DEWATS SHAPES CAN BE ADJUSTED ACCORDING TO THE SITE IN COORDINATION WITH SW ENGINEERS.
- THIS IS THE PROPERTY OF SW & IS NOT TO BE COPIED OR PRODUCED ANYWHERE WITHOUT THEIR PERMISSION.



TOP VIEW



Note: All dimensions are in cm

Page:
(2/6)

TOP VIEW

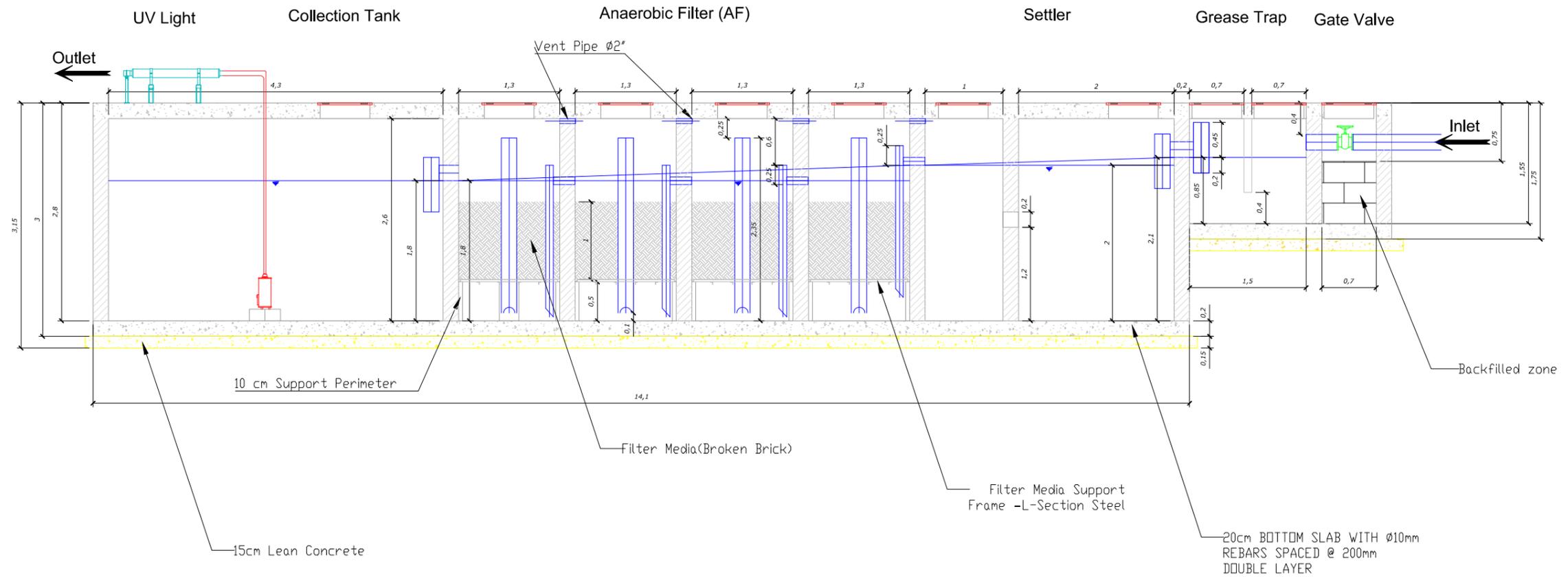
**GREYWATER
TREATMENT SYSTEM
DRAWING**

DESIGN & DRAWN BY :
Eng: ALEND M. MAHDI
Eng: SAMAN KHALIL

- CONCRETE MIX (1:2:2) AND MORTAR MIX (1:1) FOR ALL PARTS.
- PLASTER 25mm INSIDE & OUTSIDE OF WALLS (SYSTEM AND MIXED WATER PROOF POWDER).
- THE (NGL) NATURAL GROUND LINE FROM MODULE A SERVES AS THE REFERENCE LINE (0,0) FOR ALL MODULES OF DEWATS. FROM 0,0 ELEVATION, FREEBOARD MUST BE ADJUSTED TO COPE WITH THE WATER ELEVATION INSIDE THE DEWATS MODULES. WATER ELEVATION IN MODULES MUST STRICTLY BE FOLLOWED TO AVOID BACKFLOW AND AFFECT TREATMENT EFFICIENCY OF DEWATS.
- PROVIDE A WORKING DISTANCE OF AT LEAST 50-80CM ALLOWANCE FROM WALL DURING EXCAVATION.
- THE ELEVATION OF THE INLET PIPES IN EACH MODULE MAY CHANGE ACCORDING TO ACTUAL ELEVATIONS DURING CONSTRUCTION. AIR SPACE CAN BE CHANGED, BUT THE WATER DEPTH MUST BE FOLLOWED AS SPECIFIED IN THE PLAN.
- GRAVEL BED MUST BE WELL-COMPACTED. THICKNESS OF GRAVEL BED MAY VARY DEPENDING ON SOIL TYPE.
- PROVIDE 4 VENT PIPE ONE IN SETTLER AND ONE IN ABR ACCORDING TO THE SITE IN A PLACE THAT SHOULD NOT LOOK BAD AND IT SHOULD BE 1m HIGHER THAN BUILDING.
- DEWATS SHAPES CAN BE ADJUSTED ACCORDING TO THE SITE IN COORDINATION WITH SW ENGINEERS.
- THIS IS THE PROPERTY OF SW & IS NOT TO BE COPIED OR PRODUCED ANYWHERE WITHOUT THEIR PERMISSION.



LONGITUDINAL SECTION (A)



Note: All dimensions are in cm

Page:
(3/6)

LONGITUDINAL VIEW CROSS
SECTION (A)

GREYWATER
TREATMENT SYSTEM
DRAWING

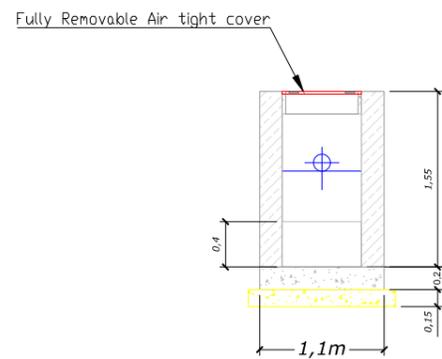
DESIGN & DRAWN BY :
Eng: ALEND M. MAHDI
Eng: SAMAN KHALIL

- CONCRETE MIX (1:2:2) AND MORTAR MIX (1:1) FOR ALL PARTS.
- PLASTER 25mm INSIDE & OUTSIDE OF WALLS (SYSTEM AND MIXED WATER PROOF POWDER).
- THE (NGL) NATURAL GROUND LINE FROM MODULE A SERVES AS THE REFERENCE LINE (0,0) FOR ALL MODULES OF DEWATS. FROM 0,0 ELEVATION, FREEBOARD MUST BE ADJUSTED TO COPE WITH THE WATER ELEVATION INSIDE THE DEWATS MODULES. WATER ELEVATION IN MODULES MUST STRICTLY BE FOLLOWED TO AVOID BACKFLOW AND AFFECT TREATMENT EFFICIENCY OF DEWATS.
- PROVIDE A WORKING DISTANCE OF AT LEAST 50-80CM ALLOWANCE FROM WALL DURING EXCAVATION.
- THE ELEVATION OF THE INLET PIPES IN EACH MODULE MAY CHANGE ACCORDING TO ACTUAL ELEVATIONS DURING CONSTRUCTION. AIR SPACE CAN BE CHANGED, BUT THE WATER DEPTH MUST BE FOLLOWED AS SPECIFIED IN THE PLAN.
- GRAVEL BED MUST BE WELL-COMPACTED. THICKNESS OF GRAVEL BED MAY VARY DEPENDING ON SOIL TYPE.
- PROVIDE 4 VENT PIPE ONE IN SETTLER AND ONE IN ABR ACCORDING TO THE SITE IN A PLACE THAT SHOULD NOT LOOK BAD AND IT SHOULD BE 1m HIGHER THAN BUILDING.
- DEWATS SHAPES CAN BE ADJUSTED ACCORDING TO THE SITE IN COORDINATION WITH SW ENGINEERS.
- THIS IS THE PROPERTY OF SW & IS NOT TO BE COPIED OR PRODUCED ANYWHERE WITHOUT THEIR PERMISSION.

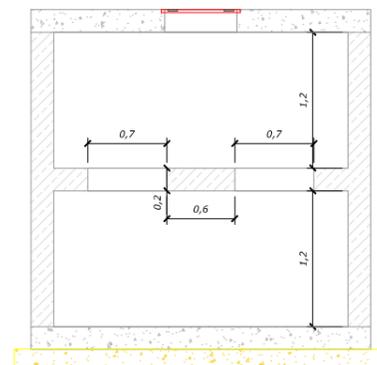


CROSS SECTIONS

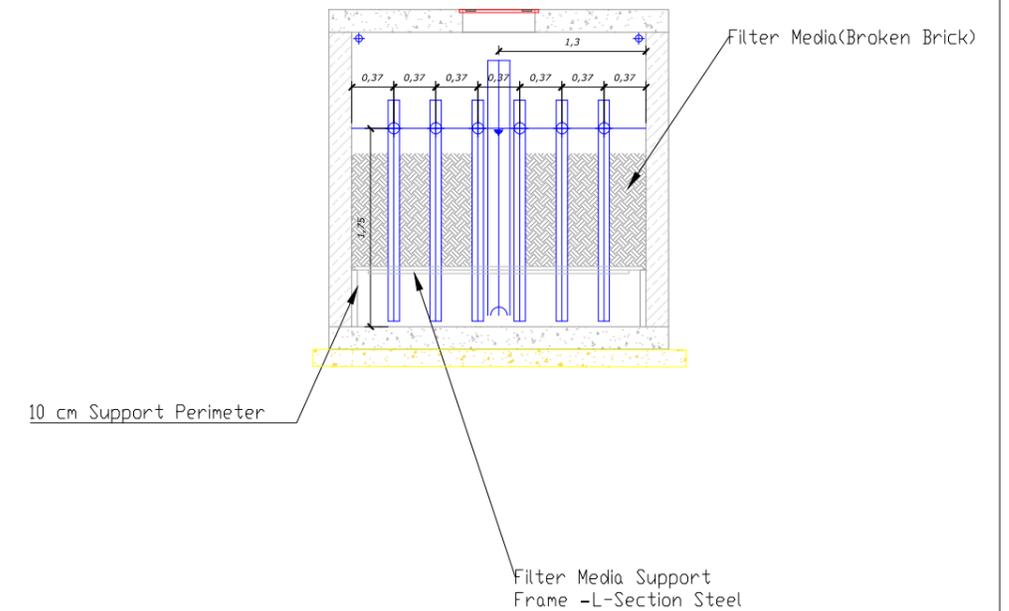
CROSS SECTION (B)
GREASE TRAP



CROSS SECTION (C)
SETTLER



CROSS SECTION (D)
ANAEROBIC FILTER



Note: All dimensions are in cm

Page:
(4/6)

CROSS SECTIONS (B,C,D)

GREYWATER
TREATMENT SYSTEM
DRAWING

DESIGN & DRAWN BY :
Eng: ALEND M. MAHDI
Eng: SAMAN KHALIL

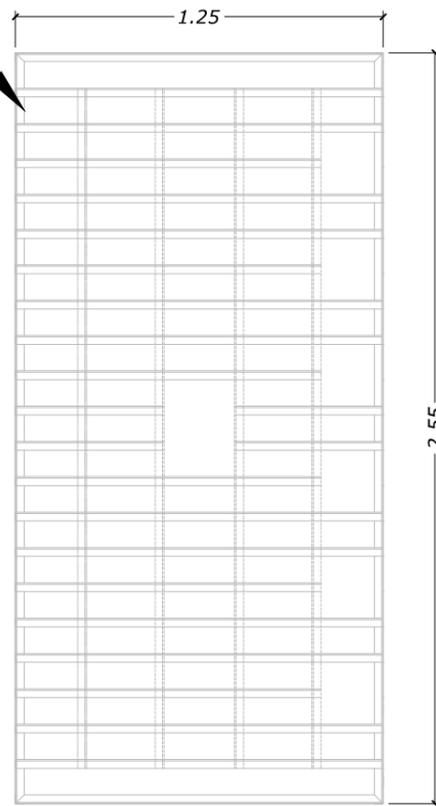
- CONCRETE MIX (1:2:2) AND MORTAR MIX (1:1) FOR ALL PARTS.
- PLASTER 25mm INSIDE & OUTSIDE OF WALLS (SYSTEM AND MIXED WATER PROOF POWDER).
- THE (NGL) NATURAL GROUND LINE FROM MODULE A SERVES AS THE REFERENCE LINE (0,0) FOR ALL MODULES OF DEWATS. FROM 0,0 ELEVATION, FREEBOARD MUST BE ADJUSTED TO COPE WITH THE WATER ELEVATION INSIDE THE DEWATS MODULES. WATER ELEVATION IN MODULES MUST STRICTLY BE FOLLOWED TO AVOID BACKFLOW AND AFFECT TREATMENT EFFICIENCY OF DEWATS.
- PROVIDE A WORKING DISTANCE OF AT LEAST 50-80CM ALLOWANCE FROM WALL DURING EXCAVATION.
- THE ELEVATION OF THE INLET PIPES IN EACH MODULE MAY CHANGE ACCORDING TO ACTUAL ELEVATIONS DURING CONSTRUCTION. AIR SPACE CAN BE CHANGED, BUT THE WATER DEPTH MUST BE FOLLOWED AS SPECIFIED IN THE PLAN.
- GRAVEL BED MUST BE WELL-COMPACTED. THICKNESS OF GRAVEL BED MAY VARY DEPENDING ON SOIL TYPE.
- PROVIDE 4 VENT PIPE ONE IN SETTLER AND ONE IN ABR ACCORDING TO THE SITE IN A PLACE THAT SHOULD NOT LOOK BAD AND IT SHOULD BE 1m HIGHER THAN BUILDING.
- DEWATS SHAPES CAN BE ADJUSTED ACCORDING TO THE SITE IN COORDINATION WITH SW ENGINEERS.
- THIS IS THE PROPERTY OF SW & IS NOT TO BE COPIED OR PRODUCED ANYWHERE WITHOUT THEIR PERMISSION.



FILTER MEDIA SUPPORT FRAME DETAILS

Top View

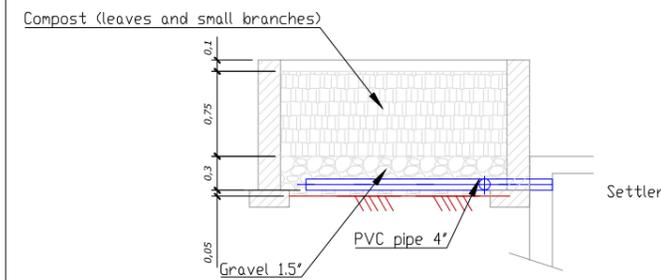
Distance between L sections according to necessity



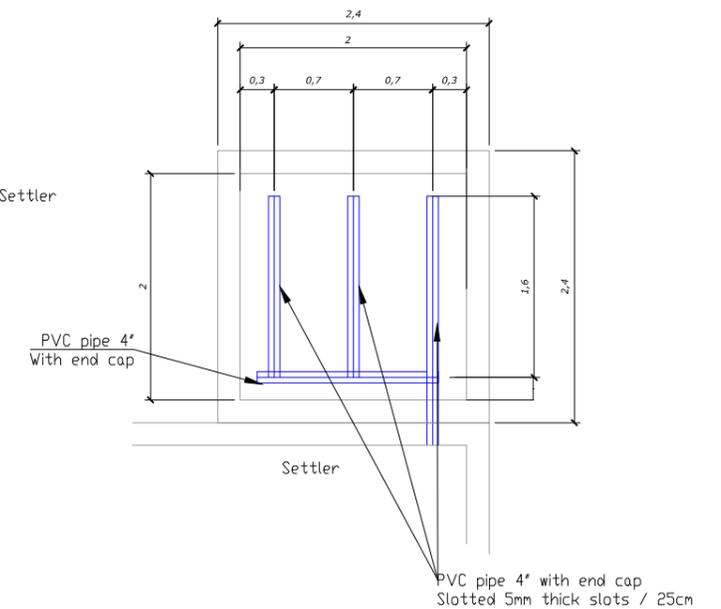
Note: All dimensions are in cm

COMPOST PIT

TRANSVERSAL SECTION



TOP VIEW



Page:
(5/6)

Aerobic Filter Perferated Slab and Manhole Details and COMPOST PIT

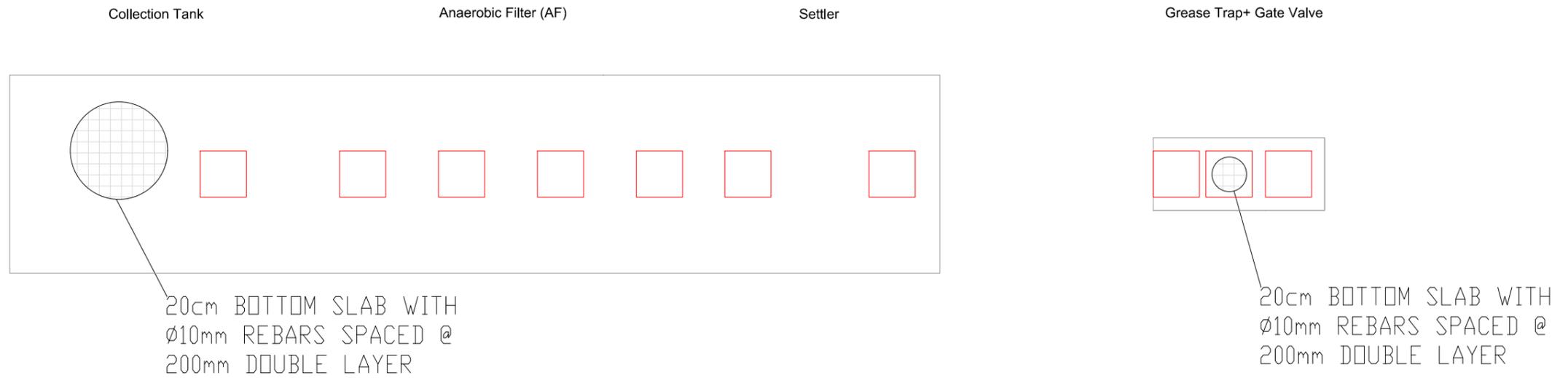
GREYWATER TREATMENT SYSTEM DRAWING

DESIGN & DRAWN BY :
Eng: ALEND M. MAHDI
Eng: SAMAN KHALIL

- CONCRETE MIX (1:2:2) AND MORTAR MIX (#) FOR ALL PARTS.
- PLASTER 25mm INSIDE & OUTSIDE OF WALLS (SYSTEM AND MIXED WATER PROOF POWDER.
- THE (NGL) NATURAL GROUND LINE FROM MODULE A SERVES AS THE REFERENCE LINE (0,0) FOR ALL MODULES OF DEWATS. FROM 0,0 ELEVATION, FREEBOARD MUST BE ADJUSTED TO COPE WITH THE WATER ELEVATION INSIDE THE DEWATS MODULES. WATER ELEVATION IN MODULES MUST STRICTLY BE FOLLOWED TO AVOID BACKFLOW AND AFFECT TREATMENT EFFICIENCY OF DEWATS.
- PROVIDE A WORKING DISTANCE OF AT LEAST 50-80CM ALLOWANCE FROM WALL DURING EXCAVATION.
- THE ELEVATION OF THE INLET PIPES IN EACH MODULE MAY CHANGE ACCORDING TO ACTUAL ELEVATIONS DURING CONSTRUCTION. AIR SPACE CAN BE CHANGED, BUT THE WATER DEPTH MUST BE FOLLOWED AS SPECIFIED IN THE PLAN.
- GRAVEL BED MUST BE WELL-COMPACTED. THICKNESS OF GRAVEL BED MAY VARY DEPENDING ON SOIL TYPE.
- PROVIDE 4 VENT PIPE ONE IN SETTLER AND ONE IN ABR ACCORDING TO THE SITE IN A PLACE THAT SHOULD NOT LOOK BAD AND IT SHOULD BE 1m HIGHER THAN BUILDING.
- DEWATS SHAPES CAN BE ADJUSTED ACCORDING TO THE SITE IN COORDINATION WITH SW ENGINEERS.
- THIS IS THE PROPERTY OF SW & IS NOT TO BE COPIED OR PRODUCED ANYWHERE WITHOUT THEIR PERMISSION.



BOTTOM & TOP SLAB REINFORCEMENT



TOP SLAB REINFORCEMENT



Note: All dimensions are in cm

REINFORCEMENT DETAILS

- CONCRETE MIX (1:2:2) AND MORTAR MIX (1) FOR ALL PARTS.
- PLASTER 25mm INSIDE & OUTSIDE OF WALLS (SYSTEM) AND MIXED WATER PROOF POWDER.
- THE (NGL) NATURAL GROUND LINE FROM MODULE A SERVES AS THE REFERENCE LINE (0,0) FOR ALL MODULES OF DEWATS. FROM 0,0 ELEVATION, FREEBOARD MUST BE ADJUSTED TO COPE WITH THE WATER ELEVATION INSIDE THE DEWATS MODULES. WATER ELEVATION IN MODULES MUST STRICTLY BE FOLLOWED TO AVOID BACKFLOW AND AFFECT TREATMENT EFFICIENCY OF DEWATS.
- PROVIDE A WORKING DISTANCE OF AT LEAST 50-80CM ALLOWANCE FROM WALL DURING EXCAVATION.
- THE ELEVATION OF THE INLET PIPES IN EACH MODULE MAY CHANGE ACCORDING TO ACTUAL ELEVATIONS DURING CONSTRUCTION. AIR SPACE CAN BE CHANGED, BUT THE WATER DEPTH MUST BE FOLLOWED AS SPECIFIED IN THE PLAN.
- GRAVEL BED MUST BE WELL-COMPACTED. THICKNESS OF GRAVEL BED MAY VARY DEPENDING ON SOIL TYPE.
- PROVIDE 4 VENT PIPE ONE IN SETTLER AND ONE IN ABR ACCORDING TO THE SITE IN A PLACE THAT SHOULD NOT LOOK BAD AND IT SHOULD BE 1m HIGHER THAN BUILDING.
- DEWATS SHAPES CAN BE ADJUSTED ACCORDING TO THE SITE IN COORDINATION WITH SW ENGINEERS.
- THIS IS THE PROPERTY OF SW & IS NOT TO BE COPIED OR PRODUCED ANYWHERE WITHOUT THEIR PERMISSION.

GREYWATER TREATMENT SYSTEM DRAWING

DESIGN & DRAWN BY :
Eng: ALEND M. MAHDI
Eng: SAMAN KHALIL

