



Yangon City Development Committee

Engineering Department (Water & Sanitation)

“Wastewater Control and Management”

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(Water & Sanitation)

Yangon City Development Committee

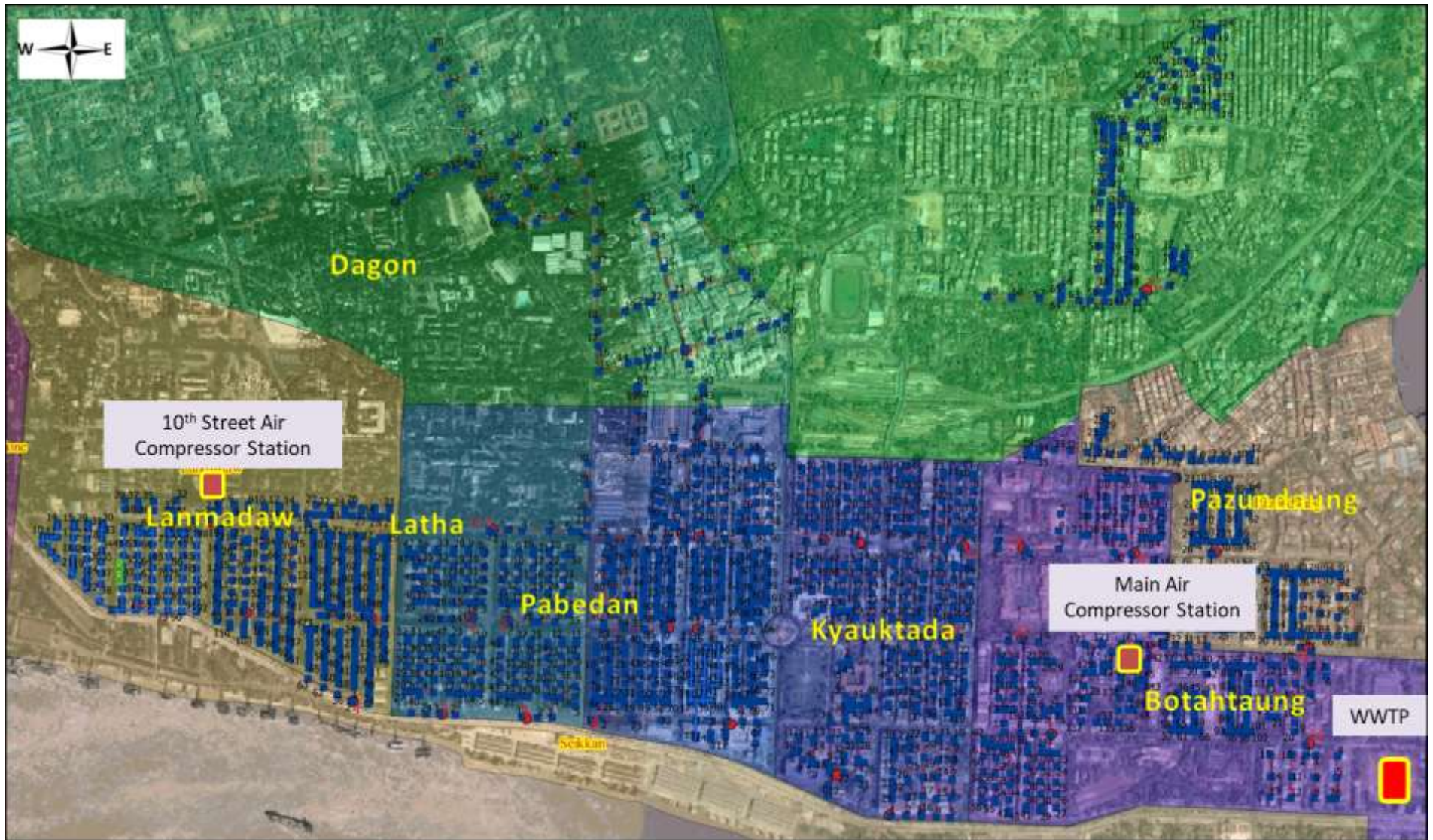
8 - 06 - 2024
(Saturday)

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- Existing Sewerage System
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- Treatment Plant
- Testing of research for vacuum
- Wastewater Treatment Project Construction for Vacuum Truck
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- Reuse for Sludge management

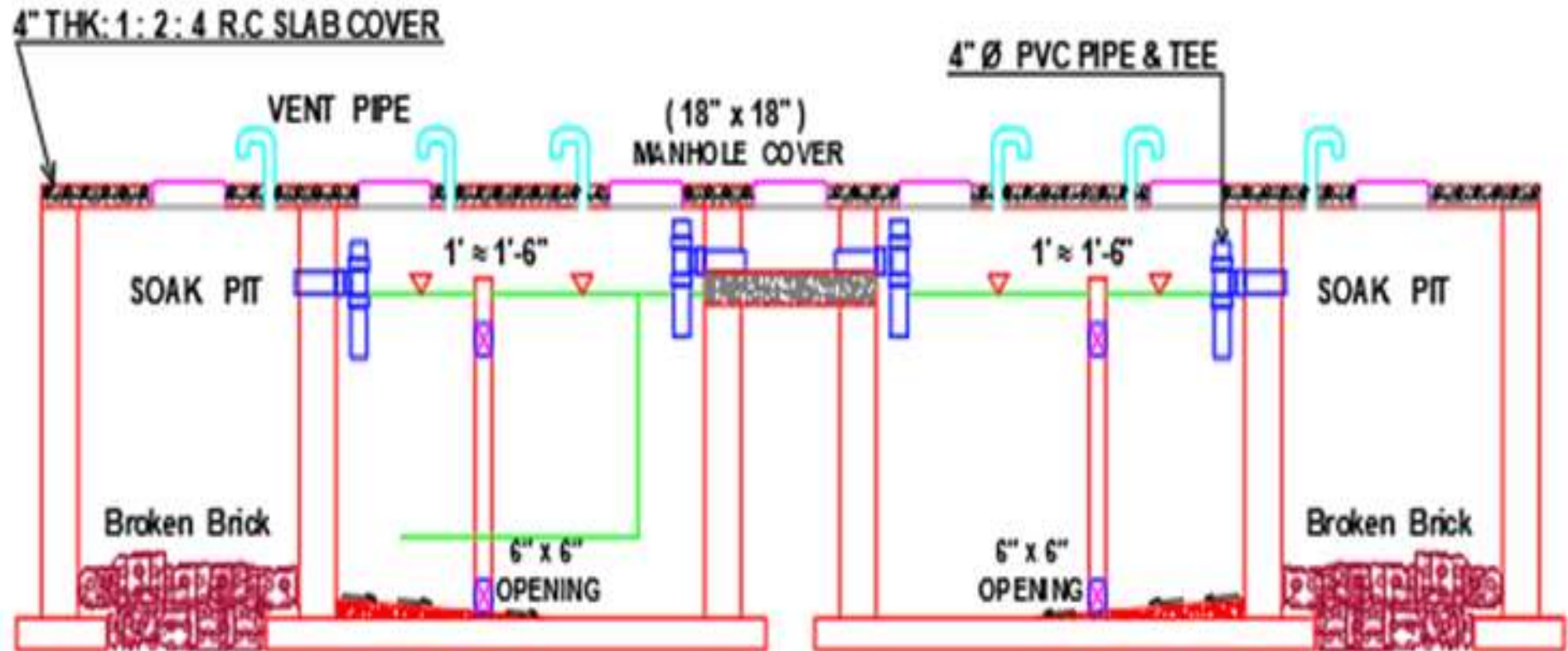


Existing Sewerage System

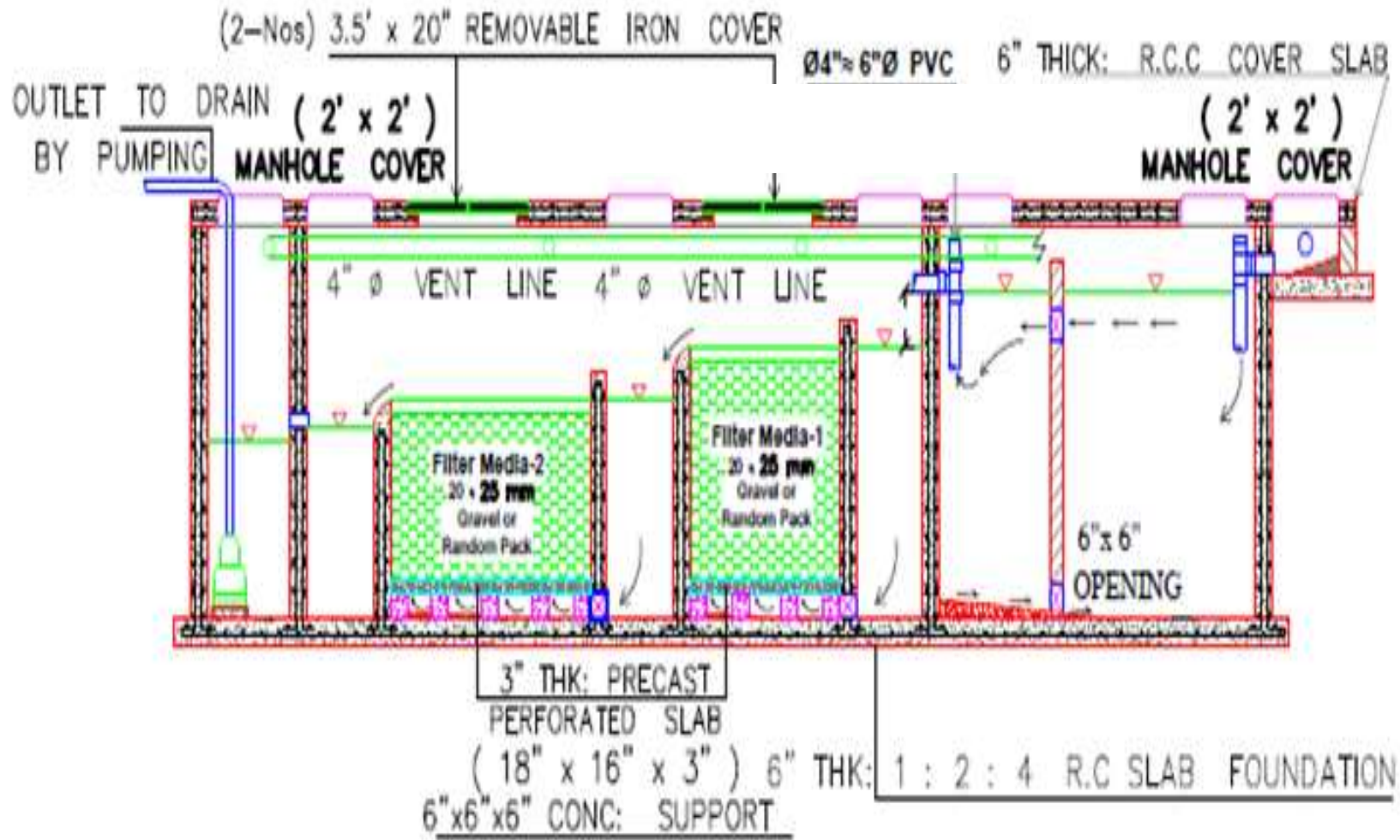


Septic Tank with Soak Pit

Septic tank system (Residential Building)



Septic Tank with Upflow Filter System



Wastewater Treatment Plant in Botahtaung Township



- Year of Establishment** - 12th April 2003
- Year of Completion** - 17th January 2005
- Year of Opening ceremony** - 22nd December 2006
- Volume of Daily Treatable sewage** - 3.25MGD
- Developer** - Myanmar Engineers of Yangon City Development Committee
- Cost of Project** - US\$ 0.96 Millions (Myanmar Kyat -2065.7 Millions)
- Areas of Plant** – 5.56 Acres

Wastewater Treatment Plant in Botahtaung Township



Layout plan of Treatment plant

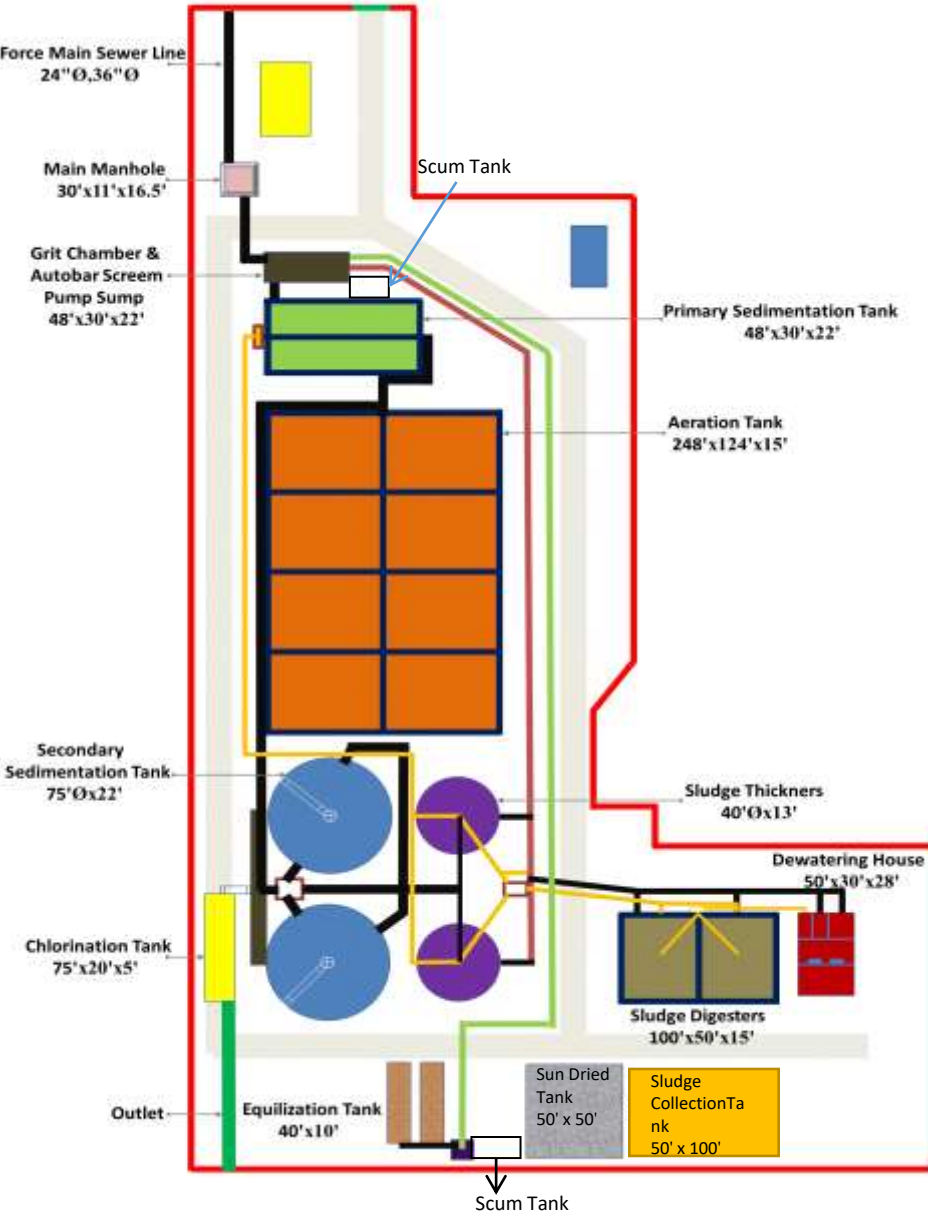
Establishment of Sewage Treatment Plant

Programme for Sewage Treatment Project

- Detail Design
- Implementation
- Installation
- Commissioning
- Installation
- Training

Design Criteria:

- Area of Plant - 5.56 acres
- Design population - 300,000
- Daily wastewater discharge - 14775 m³/day
- BOD influent - 600mg / l
- BOD effluent - 20 mg / l
- Suspended solid influent- 700 mg / l
- Suspended solid effluent- 40 mg / l



Main manhole



Equalization Tank With Pre-sedimentation & Aeration



Pump Sump



Auto Bar Screen & Grit Separator (Removal of solid waste & sand)



Primary Sedimentation Tank



Scum Tank I



Scum Tank II

Aeration Tank with Surface Aerator and Submersible Aerator



Future Plan



Now

Future



Secondary Sedimentation Tank



Chlorination Tank



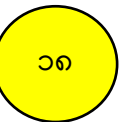
Treated Water (Effluent)



**Effluent quality of treatment plant is BOD <20 mg/L and Suspended solid <40 mg/L.
After operation of wastewater treatment plant, waste water from City Business Area is
treated before discharge to the Yangon river.**

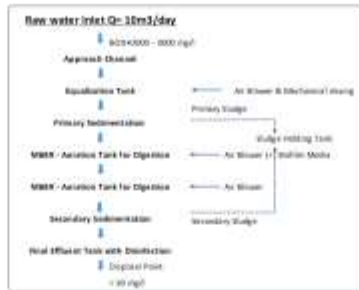
Challenges and Solution

- BOD concentration overloaded beyond the design influent.
- High concentration of oil & grease , debris and solid and scum.
- Monitoring process depend on laboratory results.
- Operation start since 2005, maintenance is necessary.
- Only one sun-dried tank.
- Equalization Tank with pre-sedimentation & step aeration.
- Sludge collection tank



Implementation of 10 m3 Wastewater Treatment Research

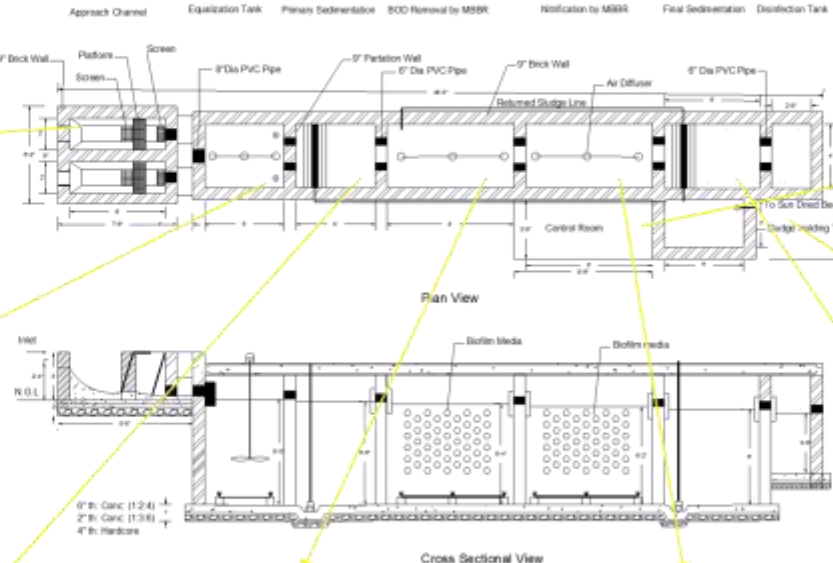
စီမံကိန်းဆိုင်ရာအချက်အလက်များ	
စတင်တည်ဆောက်သည့်နေ့စွဲ	၁၅.၆.၂၀၂၂
စတင်လည်ပတ်သည့်နေ့စွဲ	၂၇.၁၁.၂၀၂၂
သန့်စင်သည့်ဆေးရုံအရွယ်အစား	၁၀၀၀ (၁၀၀၀လီတာ)
သန့်စင်နိုင်သည့်ပမာဏ	၂၂၀၀ လီတာ /ရက်
သန့်စင်ပုံစံ	Moving Bed Bio-Reactor(MBBR)
အရရှိသော BOD	2000-3000 mg/l
အရရှိသော BOD	< 50 mg/l
အရရှိသော TSS	< 50 mg/l



Actual Effective Dimension after Adjustment(MBBR Two Steps)											
	Inlet BOD	MBR1	MBR2	MBR3	MBR4	MBR5	MBR6	MBR7	MBR8	Total Tank Volume	MBR Volume
Flow rate (litre/hr)	2000 mg/l	5 hr	3 hr	3.5 hr	3.5 hr	4 hr	3 hr				
Flow rate (litre/hr)	800 (2000/2.5)	Screening Unit (2)	Equalization Tank with enhanced sludge process	Primary Sedimentation Tank	MBBR Tank (BOD Removal)	MBBR Tank (Nitrification)	Secondary Sedimentation Tank	Disinfection Tank			
10	30 kg BOD/Day	R	R	R	R	R	R	R	R	R	R
Tank Dimension (Effective Volume)		1	5	5	5	8	6	6	2.5	40.5	8
		W	5	4	4	4	4	4	4	4	4
		D	3	6	6	6	6	6	5	6	5.5
Tank Volume	V (m³)	90	120	120	152	152	144	50	972	176	880
		MBR									1880
											1880



Small Scaled On-Site Wastewater Treatment Plant (10m3) Research Project



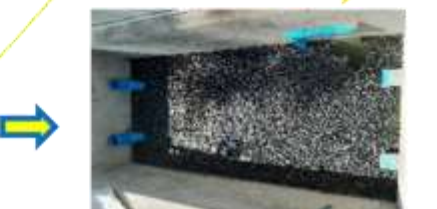
Approach Channel



Equalization Tank



Primary Sedimentation Tank



Moving Bed Bio-reactor Tank(BOD Removal)



Moving Bed Bio-reactor Tank (Nitrification)



Air Blower House



Sludge Holding Tank



Secondary Sedimentation Tank

Implementation of 20 m³ Wastewater Treatment Research



Collecting Tank



Approach Channel



Equalization Tank



Final Effluent Tank



Secondary Sedimentation Tank



Moving Bed Bio-reactor Tank (Nitrification)



Moving Bed Bio-reactor Tank (BOD Removal)

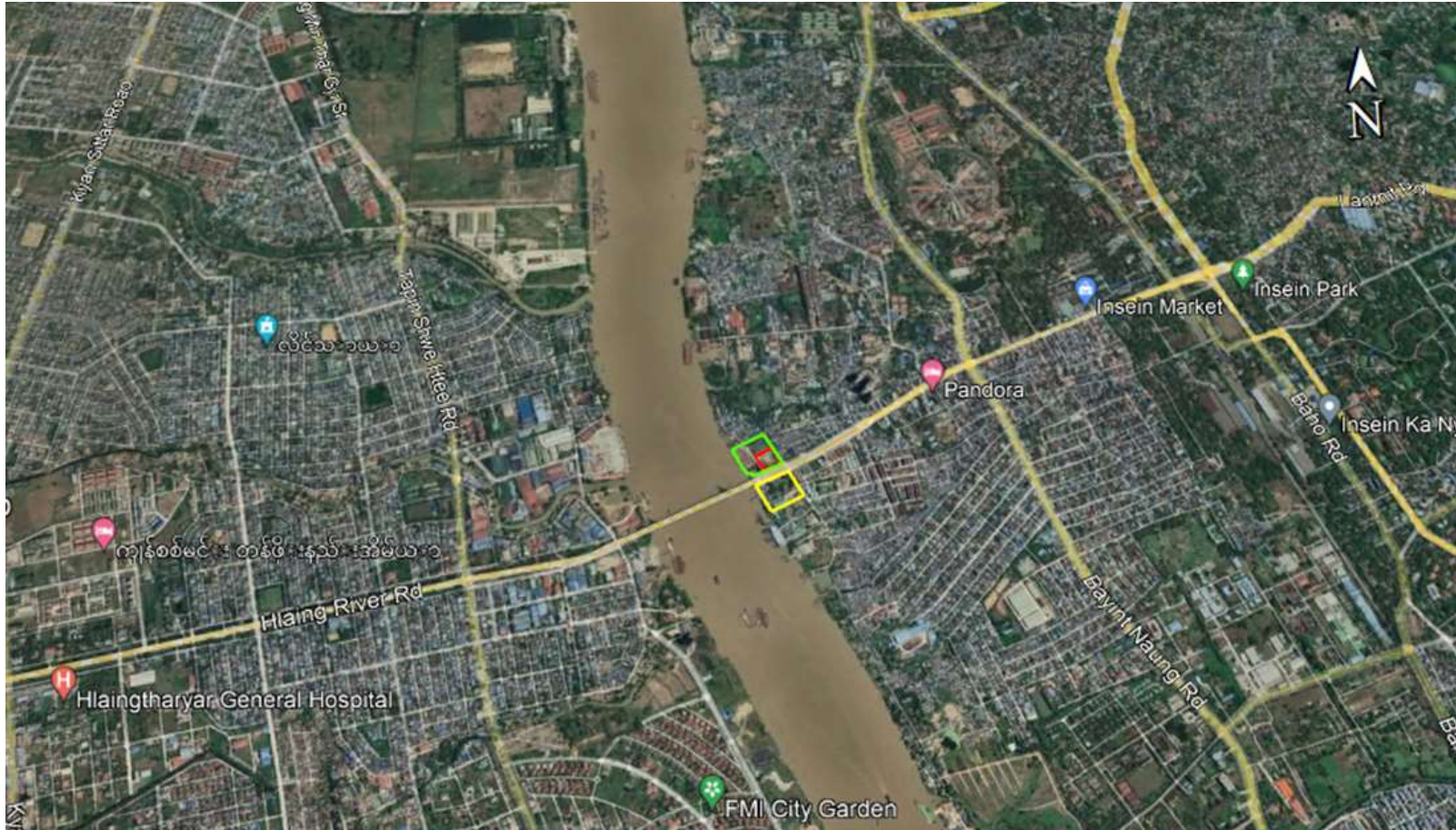


Primary Sedimentation Tank



On-site Wastewater Treatment & Disposal System

Project Location



မံခန့်ခွဲနိုင်သည့်စီမံကိန်းမြေနေရာ



- လက်ရှိအကောင်အထည်ဖော်မည့် စီမံကိန်းမြေနေရာ



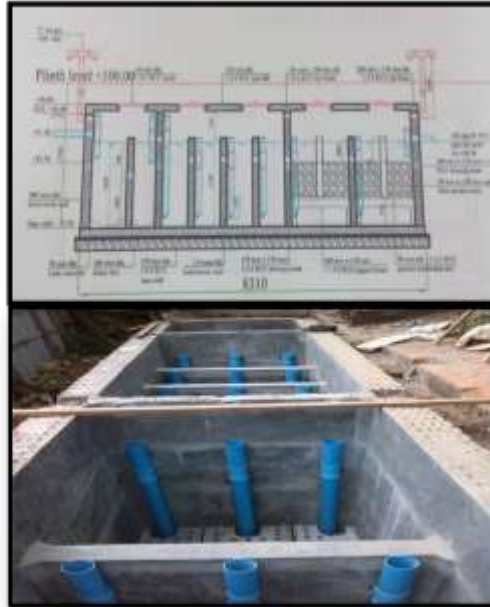
YCDC စီမံခန့်ခွဲနိုင်သည့်မြေနေရာ

On-site Wastewater Treatment & Disposal System

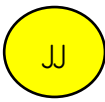
ဂျပန်နည်းပညာသုံးရေဆိုးသန့်စင်မှုပုံးစနစ်
(JOHKASOU)



သီခြားစနစ်သန့်စင်မှုပြုနိုင်သည့်ဂျာမနီ
နည်းပညာသုံးရေဆိုးသန့်စင်မှု(DEWATS)



ခေတ်မှီနည်းပညာသုံးလေလိုပိုးမွှေး
ချေဖျက်သန့်စင်မှုစနစ်(MBBR/MBR)



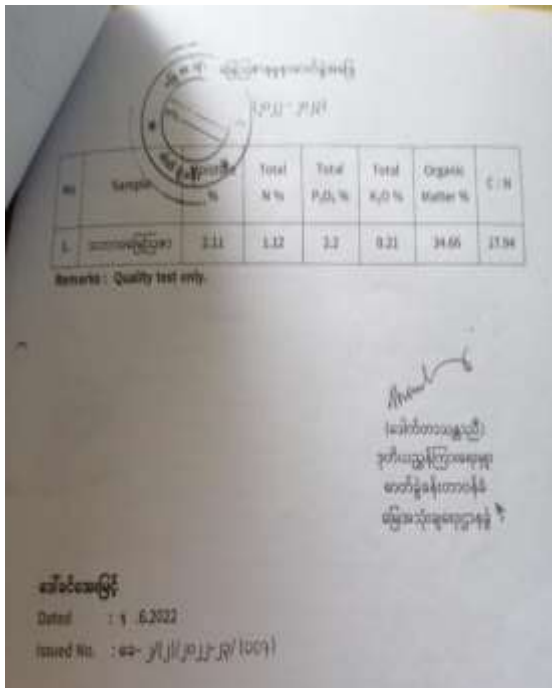
Test Results of Sludge



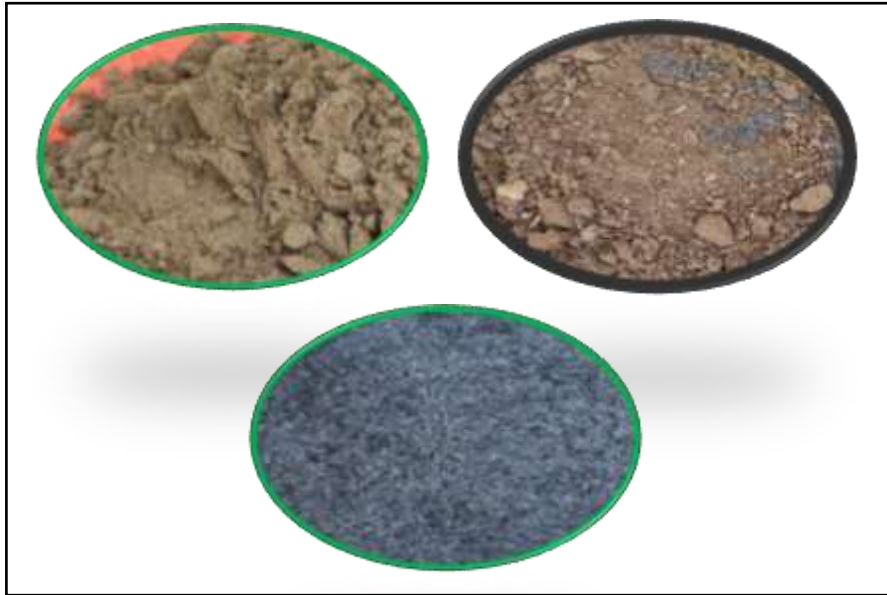
2022-2033

	Sample	Parameter	Result	Standard	Remark
1	Natural fertilizer	Moisture %	2.11	< 2	
		Total N %	1.12	3 ~ 5	
		Total P ₂ O ₅ %	2.2	3 ~ 5	
		Total K ₂ O %	0.21	3 ~ 5	
		Organic Matter %	34.66	> 20	
		C : N	17.94	< 20	

Remark II || Confirms to the quality of Myanmar fertilizer specifications



Use as a fertilizer



Sand , Sludge & Chaff ash



Reuse of Sludge as a Fertilizer



Wastewater Treatment Laboratory



Guideline for Wastewater Laboratory

STANDARDS FOR DISCHARGE OF EFFLUENT UNDER UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) GUIDELINES

No.	PARAMETER	MAX; PERMISSIBLE LIMITS
1	pH	6.0 to 8.0
2	Oil and Grease	10 mg/l
3	Phosphate(total)	10 mg/l
4	Phosphate (soluble)	5.0 mg/l
5	TDS	1200 mg/l
6	Temperature	20 to 35°C
7	Total Suspended Solids	100mg/l
8	Turbidity	300 NTU
9	Nitrogen total	20 mg/l
10	COD	100 mg/l
11	BOD ₅	50 mg/l

TDS – Total Dissolved Solids

COD – Chemical Oxygen Demand

BOD₅ – Biochemical Oxygen Demand

Measuring Parameter in Wastewater Treatment Laboratory

No	Parameter	Units
1	BOD (Biochemical Oxygen Demand)	mg/l
2	COD (Chemical Oxygen Demand	mg/l
3	TSS (Total Suspended Solid)	mg/l
4	SVI (Sludge Volume Index)	mg/l
5	DSVI (Dilute Sludge Volume Index)	mg/l
6	pH (Potential of Hydrogen Ion)	-
7	DO (Dissolved Oxygen)	mg/l
8	TDS (Total Dissolved Solid)	mg/l
9	Turbidity	NTU
10	MLSS (Mixed Liquor Suspended Solids)	ml
11	Oil & Grease	mg/l
12	Total Nitrogen	mg/l
13	Total Phosphate	mg/l

- Measuring Parameter Onsite System

No	Parameter	Units	Remark
1	pH (Potential of Hydrogen Ion)	-	Probe
2	DO (Dissolved Oxygen)	mg/l	Probe
3	TDS (Total Dissolved Solid)	mg/l	Probe
4	Turbidity	NTU	-
5	COD (Chemical Oxygen Demand)	mg/l	Pack Test
6	NH ₄ (Ammonium)	mg/l	Pack Test
7	NO ₃ (Nitrate)	mg/l	Pack Test
8	NO ₂ (Nitrite)	mg/l	Pack Test
9	Transparency	ml/l	-

THANK YOU