MINISTRY OF HEALTH AND SOCIAL PROTECTION
OF THE PEOPLE OF THE REPUBLIC OF TAJIKISTAN

National Standards

and

Guidelines on Water, Sanitation, Hygiene and Health Care Waste Management in Health Care Facilities

Endorsed by the MoHSPP
January 6, 2023

Funded by the European Union

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Contents

Rationale for developing the guidelines

WaSH in health care facilities is one of the main prerequisites for achieving the national health goals, which go in line with the Sustainable Development Goals (SDGs) - Goal 3 (to ensure healthy lives and promote well-being) and Goal 6 (to ensure the availability and sustainable use of water and sanitation for all).

Safe water, functioning hand washing facilities, latrines, hygiene and cleanliness practices are all critical to improving maternal, newborn and child health outcomes, as well as basic infection, prevention and control interventions (IPC) that are necessary to prevent public health hazards that may result from poor WaSH services[1].

This guide includes minimum standards for water supply, sanitation, hygiene and healthcare waste management in health care facilities. This guiding document summarizes recommendations and provides general guidance on the adoption of international and national water and sanitation standards and the implementation of necessary public health measures.

Preventive measures to prevent the occurrence of nosocomial infections in medical institutions, ensuring the safety of examination and treatment, epidemiological measures, measures to control infectious diseases, reducing the time of hospitalization of patients, reducing material and labor costs, improving the sanitary condition of hospitals and decontaminating garbage - the priority task of everyone head of a healthcare facility.

In this direction, taking into account the recommendations of the WHO and other international organizations with sufficient experience in dealing with the above issues is of corresponding benefit.

This document provides information that is intended for use by practitioners working in the field of Sanitary and Epidemiological Surveillance and public health. The guidelines provided herein shall be of help for the successful solution of many problems that arise during the repair, reconstruction and construction of water and sanitation facilities in medical institutions, including the collection, disinfection, storage, transportation and disposal of hazardous medical waste.

[1] Water, Sanitation and Hygiene Improvement Handbook for Healthcare Facilities (WASH FIT). A practical guide to improving quality of care by improving water, sanitation and hygiene in health care settings. UNICEF 2018.

Members of the technical working group (TWG) on the review of water supply, sanitation and hygiene standards in health care facilities (WASH in HCF)

The key members from the government that were included in the technical working group are the following ministries and departments by Order of the Minister of Health and Social Protection of the People of the Republic of Tajikistan (MoHSPP) dated May 1, 2021 No. 372, and subsequent notification from the Department of Sanitary and Epidemiological Safety, Emergencies and Emergency Medical assistance of the MoHSPP dated May 25, 2021:

1. Capital Construction Department of the Ministry of Health and Social Protection of the Republic of Tajikistan;

2. Department of Sanitary and Epidemiological Safety, Emergencies and Emergency Medical Assistance of the Ministry of Health and Social Protection of the Republic of Tajikistan;

3. State Sanitary and Epidemiological Surveillance Service of the Ministry of Health and Social Protection of the Republic of Tajikistan;

4. Ministry of Energy and Water Resources of the Republic of Tajikistan;

5. Committee for Architecture and Construction under the Government of the Republic of Tajikistan;

6. Committee for Environmental Protection under the Government of the Republic of Tajikistan;

7. State unitary enterprise "Khojagii Manziliyu Komunali" (SUE KMK);

8. Agency for Standardization, Metrology, Certification and Trade Inspection under the Government of the Republic of Tajikistan (Tajikstandart);

9. Representative of the United Nations Children's Fund in the Republic of Tajikistan.

Also, consultations were held with development partners including the World Health Organization (WHO), World Bank (WB), European Union (EU), Swiss Agency for Development and Cooperation (SDC), Japan International Cooperation Agency (JICA), KfW Development Bank, projects of the United States Agency for International Development (USAID), Asian Development Bank (ADB), International Secretariat for Water (ISW) and so on.

These proposals and recommended changes in the relevant standards are agreed with the members of the TWG and are accepted by them for further agreement and approval at the national level and application by the relevant stakeholders:

1. Dr. Abdullozoda Jamoliddin, Minister of Health and Social Protection of the Population of the Republic of Tajikistan;
2. Dr. Amirzoda Abdukholik, Chief State Sanitary Doctor of the Republic of Tajikistan, Deputy Minister of Health and Social Protection of the Population of the Republic of Tajikistan;
3. Dr. Navruz Jafarov, Head of the Department of Sanitary and Epidemiological Safety, Emergencies and Emergency Medical Assistance of the MoHSPP;
4. Dr. Faizali Salimov, Chief Specialist of the the Department of Sanitary and Epidemiological Safety, Emergencies and Emergency Medical Assistance of the MoHSPP;
5. Mr. Muzaffar Saidov, Technical Supervision Specialist, Capital Construction Department, MoHSPP;
6. Mr. Murodali Melikov, Head of Communal Hygiene Department, Service of the State Sanitary and Epidemiological Surveillance of the MoHSPP;
7. Mr. Gul Sharifov, Head of the Water Resources Department of the Ministry of Energy and Water Resources of the RT;
8. Mr. Abdukodir Zarifzoda, Deputy Director of the Design Institute "Loikhakash" of the Committee for Architecture and Construction under the Government of the RT;
9. Mr. Isfandier Shukurov, Head of the Department of State Control over the Use and Protection of Water Resources of the Committee for Environmental Protection under the Government of the Republic of Tajikistan;
10. Mr. Gaibullo Bohiri, Head of the Department of Water Supply and Sewerage, State Unitary Enterprise “Khojagii Manziliyu Kommunal”;
11. Mr. Ehabiddin Al Jayusi, International Consultant on WASH of the MoHSPP/UNICEF Tajikistan Country Office;
12. Mr. Izatullo Yakubov, National Infection Prevention and Control Consultant, MoHSPP/UNICEF Tajikistan Country Office;
13. Mr. Ammar Orakzai, WASH Specialist, UNICEF Tajikistan Country Office;
14. Mr. Ruslan Ziganshin, WASH specialist, UNICEF Tajikistan Country Office;
15. Mr. Rauf Yuldashev, WASH Engineer, UNICEF Tajikistan Country Office;
16. Mr. Anvar Khasanov, WASH consultant engineer, UNICEF Tajikistan Country Office.

A comparison between National requirements for Water Supply and Sanitation and WHO minimum standards for WaSH in HCF

Minimum National Standards for Water Supply and Sanitation

All newly constructed, reconstructed and existing medical institutions, including day hospitals, must be equipped with water supply, sewerage, centralized hot water supply (clause 5.1. “Hygienic requirements for the location, arrangement, equipment and operation of hospitals, maternity hospitals and other medical hospitals » approved by order of the Ministry of Health and Social Protection of the Republic of Tajikistan dated December 27, 2014, No. 1119).

Internal water supply and sewerage systems are to be provided in all types of buildings, including different types of health-care facilities (HCF), that are erected in areas connected to sewer networks.

In non-sewered areas of settlements, internal water supply and sewerage systems with the installation of local sewage treatment facilities must be provided for in hospitals, maternity hospitals, clinics, outpatient clinics, dispensaries and laundries (clause 1.5. SNiP 2.04.01-85 "Building standards and rules. Internal water supply and building sewer).

According to paragraph 5.1. “Hygienic requirements for the placement, arrangement, equipment and operation of hospitals, maternity hospitals and other medical hospitals “in case of owned source of water supply, water consumption by a medical institution is possible if it is approved by a sanitary and epidemiological conclusion for this source.

In practice, it can be observed that in some areas where health facilities are located, water resources are insufficient. In such cases, according to clause 2.6. SNiP 2.04.01-85, in settlements and enterprises where drinking water sources are insufficient for all needs of the consumers, with a feasibility study and in agreement with the sanitary and epidemiological services, it is allowed to supply water of non-drinking quality to urinals and toilet flush tanks. (Promoting fit-for-purpose water use).

WHO minimum requirements for WaSH

In order to provide quality health care and to minimize public health risks to patients, health-care staff, workers, and visitors WHO set a package of minimum WaSH standards for countries to adopt in health-care settings. These standards cover, among other relevant topics, water availability and accessibility, water quantity and quality, human excreta disposal, wastewater treatment and disposal, health care waste

management from collection to disposal, cleaning and laundry, vector control of vector-borne diseases, building design, health information and hygiene promotion. These following lots summarize these requirements (WHO, 2008):

- Availability of safe and adequate water for drinking, medical purposes such as medical equipment sterilization, surgery and maternity needs, food preparation, showering and laundry;
- Accessible and clean toilets, separate for men and women in sufficient numbers for staff, patients, visitors;
- People with special needs such as persons with disability or limited mobility, elderly people, etc.;
- Improved hand washing practices among health care staff and workers;
- Environmentally safe management of health care waste;
- Safe disposal of excreta and wastewater;
- Clear and practical communication with patients and visitors, including caregivers about the importance of hygiene and its' promotion.

1 WATER SUPPLY

STANDARD 1: WATER SUPPLY AVAILABILITY AND ACCESSIBILITY

Key Objective: **Safe and sufficient water from an improved and sustainable source is available for all patients, staff and visitors at all times.**

MONITORING INDICATOR:

Percentage of hospitals with drinking water from an improved water source and available all the time.

Minimum water consumption requirements for healthcare facilities

Water demands usually vary from one HCF to another depending on the average number of people being served in a particular time, number and type of tasks carried out in different units, and the level of the health facility.

Water in HCFs is primarily required for domestic use, medical procedures, sanitation and hygiene use. Water requirements in HCFs in terms of litres per person or bed per day will vary depending on the level of the facility. For example, in dispensaries water consumption per day will be lowest compared to health centers, district, regional and national/referral hospitals. Thus, the higher the level of the facility, the more the quantity of water required because of the number of users and types of uses.

Note: Regardless of the level of the facility, water in HCFs must be available at all times with adequate quantity and quality for different uses as per facility needs to maintain effective functioning of the facility.

Table (1.1) below provides minimum National and International consumption requirements for different levels of HCF in both urban and rural areas. Maintaining these parameters is expected at all times.

Table (1.1):

National water consumption requirements for health care facilities (proposed as per WHO recommendations)

HEALTH-CARE FACILITY LEVEL	UNIT OF MEASURE (l for liters)	RATES OF WATER CONSUMPTION			
		URBAN		RURAL	
		Cold & Hot	*HOT*	*Cold & Hot*	*HOT*
1.Hospitals					
Hospitals with **shared** baths and showers for all departments.	l/bed/day	**115**	**75**	100	60
Hospitals with WaSH facilities near the wards.	l/bed/day	115	75	100	60
Inpatient departments which have toilets that are separate from other departments of the hospital (including infectious disease centers)	l/bed/day	115	75	60	40
	l/carer/day	15	8	15	8
2. Polyclinics and outpatient departments					
Primary healthcare centers	l/bed/day	50	30	50	30
Outpatient departments	l/consultation	13	5.2	7	2.8
Operations/Maternity units	l/intervention	100	60	50	30
3. Emergency camp / hub hospital *(Intensive management of water supply is required to protect staffs, caregivers and patients from disease such as cholera and viral hemorrhagic fever.)**					
Outpatient departments	l/consultation	13	5.2	7	2.8
Inpatient departments which have toilets that are separate from other departments of the hospital (including infectious disease centers)	l/bed/d	115	75	60	40
	l/carer/day	15	8	15	8
Backup in case of supply failure**	Total volume to be calculated in liters as per the equation below the table.	Minimum 2 days backup supply is available and provisioned in case of supply system failure for all health facilities.		All supplied quantities to be as per water consumption rates set in this table.	

* These account for few hospitalizations and it is in very rare conditions.
** Total volume = total number of consumers X liters as per consumption rates X 2 days (water consumption to be based on peak water consumption rates)

Systems of cold, hot water supply must provide for water supply and wastewater discharge corresponding to the estimated number of water consumers or installed water supply and sanitary devices. (Source: SNIP 2.04.01-85 – Lot 3.1)

For more details on water consumption rates for sanitary appliances and overall consumption, refer to appendixes 2 and 3 of SNIP 2.04.01-85.

Note: The actual quantities of water required will depend on a number of factors, such as climate, availability and type of water use facilities (including type of toilet as explained in the sanitation section below), level of care and local water use practices.

Water Quality

For the purpose of these guidelines, water quality refers to water free from chemical, physical, bacteriological (including faecal substances) contamination, and fit for domestic and medical uses.

Drinking water quality from centralized networks must meet National Drinking Water Quality Standards (SanPiNs/GOST) and with the minimum requirements set in table (1.2).

Drinking water to be accessible to all staff, patients, and caretakers esp. friendly for children and persons with disability.

The system from where water is being supplied needs to implement Water Safety Plans (WSP), and water quality surveillance need to be integrated as a part of the verification process.

It is expected for each HCF to have a regular monitoring mechanism for checking the quality of water in collaboration with the local SES department.

Drinking water must not have any objectionable taste, odour and colour, this would discourage consumption of the water.

In cases where there is a significant risk of main source or post-delivery contamination of water, drinking water must be treated.

Water quality testing must be conducted by SES/MoHSPP before commissioning water sources for use followed by periodic sampling and testing of water samples. Frequency and sampling to be as per the MoWR/MoHS guidelines shown in table 1.2 . Results of water quality analysis must be made available to the respective healthcare facility. Additionally, health-care facilities must have chlorine disinfectants readily available for treating water, basic tools and reagents for monitoring water quality.

Water quality minimum standards

Water supplied in health-care facilities is expected to maintain a standard quality to ensure that there is total absence of risks from microbiological, chemical and physical contaminants. Thus, and given the practical difficulty to monitor all the parameters of the supplied water on regular basis, the following standard parameters need to be monitored regularly to meet quality targets in all HCF for whatever use. The parameters listed in table 1.2 are expected as a minimum requirement of testing:

Table 1.2: Water quality standards for health-care facilities

Location	Parameter	Standard/Target	Means of Verification
Ground water source (including wells and boreholes)	E. Coli	Absent	Water sampling at point of abstraction / intake on quarterly basis
	pH	6.5 – 8.5	
	Turbidity	≤ 5 NTU	
	Colour	Acceptable to consumer	
	Taste	Unobjectionable	
	Odour	Unobjectionable	
	Arsenic	0.05 mg/l	
	Fluoride	0.7-1.5 mg/l	
	Iron	0.3 mg/l	
	Manganese	0.1 – 0.5 mg/l	
	TDS *	Min 50mg/l Ideal <600mg/l Max 1000 mg/l	
	Total Filterable Residue	500 – 2000 mg/l	
	Total Hardness (CaCo3)	500 – 600 mg/l	
	Calcium Ca	75 – 300	
	Magnesium Mg	50 – 100 mg/l	
Surface water source	Nitrate (NO_3)	10 – 75 mg/l	Water sampling at point of abstraction / intake on monthly basis
	E-coli	Absent	
	pH	6.5 – 8.5	
	Turbidity	≤5 NTU	
	Colour	Acceptable to Consumer	
	Taste	Unobjectionable	
	Odour	Unobjectionable	
	TDS*	Min 50mg/l Ideal <600mg/l Max 1000 mg/l	
	Nitrate (NO_3)	10 – 75 mg/l	
Centralized piped mains water	*E-coli*	0 cfu/100ml	Water sampling at point of entry on monthly basis
	Free Residual Chlorine (FRC)	0.3 - 0.5 mg/l	
	pH	6.5-8.5	

	Turbidity	≤5 NTU	
	Colour	Acceptable to consumer	
	Taste	Unobjectionable	
	Odour	Unobjectionable	
Water collection points	*E-coli*	0 cfu/100ml	Random selection of 4 water collection points on monthly basis
	Free Residual Chlorine (FRC)	0.3 – 0.5 mg/l	
	Turbidity	≤5 NTU	
	Colour	Acceptable to consumer	
	Taste	Unobjectionable	
	Odour	Unobjectionable	
	Flow rate (speed)	0.33l/s	

Source:
* Adopted from relevant SanPiNs and WHO guidelines for safe drinking water.
** Total Dissolved Solids (TDS) comprise inorganic salts, principally calcium, magnesium, potassium, sodium, bicarbonates, chlorides, and sulfates and some small amounts of organic matter that are dissolved in water.

Note: For all health-care facilities, the water supply system owned and operated by HCFs needs to implement endorsed National Strategic Plan / Framework for Drinking Water Safety (NSP-DWS), and water quality surveillance need to be integrated as a part of the verification process.

Minimum water storage requirements

There must be a safe and reliable storage for water in each medical facility.

In an ideal situation, storage tanks can be subject to contamination, however in the case of low volumes of water availability (intermittent supply) safe and secure water storage is to be in place on HCF premises. The storage tanks are recommended to reserve capacity to supply the health care facilities with two full day of back up water (to be calculated based on peak water use) in case of interruptions in main water supply. Water storage is to be covered to prevent contamination and cleaned on a regular basis. The storage is to be regularly tested and expected to be free from any cracks and leakages.

Spare and control tanks (water towers, tanks, hydro-pneumatic tanks, heat accumulators, etc.) must contain water in a volume sufficient to regulate water consumption. The type of container, the feasibility of its arrangement and location will be determined based on technical and economic calculations.

Water-pressure and hydro-pneumatic potable water tanks, as well as storage tanks, must be made of metal with external and internal anti-corrosion protection; at the

same time, materials approved by the State Sanitary and Epidemiological Surveillance Service (SES) shall be used for internal anti-corrosion protection.

To ensure safety of stored water, the quality of water must comply with standards provided by relevant SanPiN 2.1.4.004-07.

Cleaning and disinfection of water storage tanks

It is of practical importance for HCFs to clean and disinfect water storage tank(s) at least once after every three months. Cleaning and disinfecting water storage tanks aims at removing algae (plant growth that produces bad tastes and odors), silt, and bacteria, which may be harmful.

The steps below are to be followed in cleaning and disinfecting water storage tanks:

(i) Empty the tank

(ii) Scrub or pressure wash the interior walls to remove dirt and grime with detergents

(iii) Rinse out the tank

(iv) Scrub or pressure wash the interior walls of the tank with 0.5 mg/l chlorine solution, and leave for 2 hours

(v) After

Access points

Functional water collection points and water use facility must be in place to allow convenient access to water for drinking, hand washing, toilets, personal hygiene, food preparation, laundry, cleaning, gardening and medical purposes.

Drinking water points are to be available separately from water provided for hand washing and other purposes, even if it the same supply.(Promoting fit-for-purpose water use).

Water that is not of drinking-water quality is to be used only for cleaning, laundry and sanitation purposes. (promoting fit-for-purpose water use).

Water used for medical purposes must be at least of drinking water quality, or must be of higher quality (in compliance with WHO standards) in case of extreme cases, which include dealing with patients of hemodialysis or baby bathing, cleaning. This comes to reduce risks, for example, of pseudomonas aeruginosa and/or legionella (which are resistant to low doses of chlorine used as water disinfectant).

Additional recommendations:

Given the high costs of operation and maintenance, it is highly recommended to avoid, as much as possible, infrastructure construction works that require pumps in general. Alternatively, making use of natural ground slopes to design gravity-fed water supply (and gravity-sewers) networks is recommended.

It is recommended to use polypropylene (PPR) and Polyvinyl Chloride (PVC) pipes and fittings (or other suitable options) for internal supply of water, both for rehabilitation works and new construction projects.

As possible, it is recommended to follow WHO's guidelines and standards for the quality of drinking water.

2 SANITATION

STANDARD 2: SANITATION

Key Objective: **All health-care facilities offer sufficient, accessible, private, clean, usable, secure, and gender-separated, child and disable friendly, sanitation facilities to all patient, staff, and visitors.**

MONITORING INDICATOR:

Proportion of HCF with improved sanitation facilities, which are single-sex, usable, clean, well lit, accessible for all, functional and private.

Improved sanitation facilities are of critical importance to prevent diseases by breaking pathogen transmission pathway or disease-causing organisms found in human excreta and waste-water from entering the environment and posing a threat to people's health. Thus, adequate, safe and appropriate sanitation facilities/services will serve to prevent infections and minimize spread of diseases within the HCFs, by protecting staff, patient and visitors, and maintaining the dignity of vulnerable people including pregnant women, the seriously sick patients and people with disabilities and special needs.

Toilets or latrines and showers/bathrooms/urinals must be accessible to all users including staff, patients and visitors. Urinals must be available for male use in busy facilities to reduce usage of toilets. There must be sufficient numbers of safe and accessible toilets/urinals and showers/bathrooms in each healthcare facility.

In the reception departments of medical institutions, in addition to other premises for reception and provision of emergency care, there must also be a room available for sanitation and dressing of patients and their attendants, toilets and showers at the rate of one per five patients (1:5).

The dimensions of the toilet cabins for patients must be 1.1 x 1.6 m (with the doors opened outwards.) Toilets must have washbasins. In the bathrooms of the ward sections, a place for hygiene with a shower must be equipped.

It is expected that wash-stands and basins follow National standard specifications stipulated in The Order #1119 of MoHSP as below:

Regular wash basins	
Construction	Floor standing with pedestal (erected)
Material	Porcelain
Dimensions	50x450x205cm // 600x450x220cm
Colour	White
Surgery wash basins	
Construction	Wall mounted
Material	Porcelain or Steel
Dimesions	650x580x230cm
Colour	White

Conditions for patients with disabilities must be met ensure disability friendly facilities are in place: special entrances for wheelchairs and handrails in addition to other necessary parameters must be followed. (See below sections for disability toilet and washbasin parameters).

In sanitary facilities for service personnel, the following parameters are to be considered:

- The number of shower cabins - at the rate of: at least 1 shower cabin for 10 people (1:10) in infectious diseases departments;
- In other departments - at least 1 shower cabin for 15 people (1:15) working in the largest shift of middle and junior staff;
- For smaller numbers of personnel, 1 shower cabin per department must be available;
- The bathing facility for the personnel and patients will be constructed separately;
- It is expected that bathing tubs and shower trays follow National standard specifications stipulated in The Order #1119 of MoHSP as below:

Material	Enameled steel, acrylic, ceramic or porcelain.
Height	20 – 45 cm
Width x Length (trays)	80x100cm, 90x100cm, 100x100cm
Width x Length (tubs)	70x 130cm, 70x140cm, 70x150cm
Colour	White

Minimum sanitation requirements for health-care facilities

Sanitation facilities

As per the National standards set in МҚС ҶТ 09/31/2010 “Health care institutions", “Purification and disinfection of wastewater from hospitals and other hospitals, including infectious ones, is to be carried out at city-wide or other sewage treatment facilities that guarantee the necessary effect of purification and disinfection of wastewater”.

Sanitation facilities are required to contribute in minimizing infections within the health-care facilities instead of being routes of transmission of infections. Sanitary and waste disposal facilities are to be designed and constructed in such a way that the sanitary waste or human excreta do not contaminate the environment. (WHO 2008).

All health-care facilities must have adequate functional, accessible, and improved sanitation facilities for health care workers, support staff, patients, caretakers and visitors. According to the WHO & UNICEF Joint Monitoring Programme (JMP), improved sanitation facilities are those that ensure hygienic separation of human excreta from human contact. See below for definitions of improved and unimproved sanitation facilities.

The table below provides details and examples on the types of latrines under each category: improved and unimproved sanitation facilities as per the definition of the JMP:

Table: Improved and unimproved sanitation facilities

Sanitation facility type	Facility details
Improved	Flush or pour-flush toilets to piped sewer systems or septic tanks/cesspools, Ventilated Improved Pit latrines, pit latrines with slabs, or composting toilets.
Unimproved	shared facilities of any type, no facilities (bush or field); flush or pour-flush to elsewhere (that is, not to piped sewer system, septic tank or pit); pit latrines without slab or open pits.

Recommended public toilets for health-care facilities

In general, and due to the different public health concerns in health-care facilities, each facility must aim at having improved water-based sanitation systems, hence flush toilets types must be provided in all areas fully serviced by centralized water systems. Nevertheless, and given the availability constraints in several rural areas in Tajikistan it

is recommended to consider the provision of toilets that can safely manage excreta disposal despite water supply shortages. The table below provides guidance on where improved toilets/latrines are to be provided based on the health-care facility's connection to water supply and sewerage infrastructure:

Connection Status	Type of Facility/Toilet to be provided
The health-care facility is connected to centralized water supply with connection to centralized sewers (mostly in urban areas)	**Improved** water based sanitation systems: - Flush-toilets (pedestal or squatting types) with direct sewer connections and/or plumbing works that direct excreta to centralized sewers.
The health-care facility is connected to centralized water supply **without** connection to centralized sewers (mostly in urban areas and some rural areas)	**Improved** water based sanitation systems: - Flush or pour-flush toilets with piped connection to properly designed septic tank (see below sections for recommended technical guidelines). **Improved** non-water based sanitation systems can also be used in case of intermittent or limited water supply such as: - Ventilated Improved Pit latrines (VIP). - Pit latrines with slabs. - Composting toilets.
The health-care facility is not connected to centralized water supply nor centralized sewerage network. (mostly in rural areas)	**Improved** non-water based sanitation systems: - Ventilated Improved Pit latrines (VIP). - Pit latrines with slabs. - Urine-Diversion-Dry-Toilets (UDDT). - Composting toilets and bio-digesters.

Providing adequate sanitation infrastructure and services requires careful planning and selection of appropriate designs for a facility. Designing of sanitation facilities must be part of the initial HCF planning. However, where sanitation infrastructure and services are inadequate it is equally important to plan for construction of new ones or upgrading the existing facilities. In addition to water availability the following factors are to be considered when selecting the appropriate toilet for the facility:

(i) Facility size and catchment population (with future projections)

(ii) Type of services being offered at the facility

(iii) Availability of a reliable water supply source

(iv) Level of water table

(v) Soil permeability to determine the depth of pit to be excavated and the possibility of contamination of ground water source

(vi) Presence of supporting sanitation infrastructure such as a public sewer

(vii) Socio-cultural norms of users

(viii) Cost of the sanitation infrastructure

(ix) Any other environmental technical and social considerations that might apply

In the case of water availability, the minimum treatment method for wastewater in health-care facilities must be a septic tank, which has a watertight receptacle for the separation of solid and liquid components of wastewater and for the digestion of organic matter in an anaerobic environment . A constructed septic tank must consist of two or more compartments. A cross section part of a septic tank is shown in annex 1 (See cross section with filter for anaerobic environment septic tank design).It is also recommended to follow septic tank guidelines and requirements set by Oxfam which can be found at this ***link***.

Wastewater from water-flushed toilets may also be discharged in into a soak away which carries it away from the plot. See **annex 2** z for a typical design of a soak-away pits.

In areas with very limited access to water supply and lack sewer services, it is recommended to consider Ecological Sanitation approaches for health-care facility toilets which may allow communities to use composted faecal matter later for agricultural uses after composting and processing. For a typical design see **Annex 3**. In areas provided with centralized water supply (both constant and/or intermittent), it is recommended to follow various Decentralized Water Treatment Systems (DEWATS) at health-care facility levels. See **Annex 4** for a typical design of a DEWATS facility.

1. Toilets must be maintained on regular basis using anti-clogging meshes to ensure there is no blockage.

It **is recommended** to have separate pipes with soak pits for grey water, especially where septic tanks are water tight.

To reduce O&M needs and ensure in low slopes of internal plumbing pipelines, it **is recommended** to use High Density Polyethylene (HDPE) and Polyvinyl Chloride (PVC) pipes and fittings for sewerage and plumbing works of wastewater, both for rehabilitation works and new smoothness construction projects.

Toilets must be ventilated properly by either windows, ventilation vents/pipes, or by being included in building ventilation systems designs when installed internally.

Roles and responsibilities, as well as frequency and other related management aspects are agreed in a written O&M plan available to all relevant stakeholders, especially in the facilities' water and sanitation management plan (WSMP). These plans must be

developed at HCF administration level, and overseen and monitored by SES on regular basis.

In areas where HCF are not connected to conventional sewer networks, septic tanks must be de-sludged by tankers based on a regular schedule and according to water consumption rates in the hospital.

In areas where health facilities are not connected to conventional sewer networks, septic tanks must be cleared of sludge by sewage trucks on a regular schedule and in accordance with hospital water consumption rates.

As a best practice, it is recommended that all toilet facilities (internal and external) are connected to the local sewerage plumbing works that connects to the city's sewerage network. Otherwise, onsite treatment/collection must be managed.

In areas that do not have constant access to running water, or are not connected to centralized sewerage systems, ecological sanitation technologies are to be used (such as VIP, composting, or UDDT latrines).

It is recommended for any water-based sanitation toilet (pour-flush and cistern flush) to have at least one VIP/UDDT latrine per toilets block as a back-up plan in case of any unexpected interruption of water supply.

1. In areas with high water tables, a minimum vertical distance of 1.5 meters must be kept between the bottom of septic tanks/pits and the water levels. In cases where the water table is high, the horizontal distance of the tank design may be increased to avoid reaching water table levels.

2. Septic tanks / pits must have a lateral distance / distance of at least 20 meters from the chambers and 50 meters (depending on the type of soil) from any water source, that is used for drinking.

3. In mountainous/hilly areas, new pits can be dug once the old one is full, under condition that minimum vertical and lateral distances are considered between septic pits and any nearby water sources as specified above.

4. In areas not connected to centralized sewerage networks, a de-sludging schedule must be followed to ensure that sludge is taken by trucks to nearby treatment plants/stations.

5. Personal protective equipment (PPE) must be worn at time of emptying or removal of sludge from tanks or pits.

For more information about the requirements about sanitary appliances, see МҚС ҶТ 09/31/2010 "Construction norms and standards of the Republic of Tajikistan -Health care institutions".

All improved sanitation facilities must be Child, Gender, Age and Disability friendly (CGAD sanitation facilities.

- Door handles, seats and wash-basins are within the reach of children (Child friendly).
- Segregated male and female toilets (Gender friendly).
- All health-care-facilities toilets must have adequate lighting units (inside and out).
- Toilets covered bins for menstrual pad disposal must be available in all female toilets (Gender friendly).
- Toilets must provide cleansing showers and/or water buckets in both men and female toilets to meet anal-cleansing and menstrual hygiene requirements.
- Improved sanitation facilities must ensure privacy; they must be provided by internal locks, and must be separated by walls or partitions that are at least 1.8 meters high.
- Facilities must be **usable** and must provide water and/or other materials and supplies for anal-cleansing (including anal-cleansing showers), while minimizing water use. According to UNICEF/WHO Joint Monitoring Programme, for a toilet to be usable it must be available, functional and private as per the following descriptions:

Available	Available to patients and staff (toilets are on premises, doors are locked, or a key is available at all times.
Functional	The toilet is not broken. The toilet hole is not blocked, there should be no cracks or leaks in the toilet structure, and water is available for all flush/pour-flush toilets.
Private	There are closable doors that can be locked from the inside, and no large gaps or holes are seen in the structure

- Walls in toilets are to be lined with glazed tiles (light colours) and / or other moisture-resistant materials to the height of the room.
- Equipment and operation of hospitals, maternity hospitals and other medical hospitals, toilets flooring works must be done with good quality tiles that are water tight, un-slippery, and adequately sloped to allow for proper cleaning and drying of water off the toilets floor. Floors must also be resistant to detergents and disinfectants used in the hospital. Floors are to always be free of defects (slots, cracks, holes, etc.).

- The design and installation of aids and devices for patients (ramps, handrails, handles, levers, rods, etc.) must be carried out in accordance with the requirements of MSN 3.02-05-2003 (SNiP 35-01-2001) "Accessibility of buildings and structures for people with limited mobility".

For meeting disability friendly status, as a minimum standard, toilets must:

- Be accessible without stairs or steps, and include an unobstructed pathway from the HCF (if outside the building). The pathway is to be at least 1.5 meters in width, and public pathways must be clear of obstructions and using non-slip materials.

- Facilities must be built in an accessible area; meaning the way to access must be as leveled as possible in order to avoid any obstacle (trunks, branches, holes).

- Be fitted with handrails for support attached either to the floor or sidewalls.

- A ramp is always better than stairs, the ideal gradient must not be more than 5 percent (5%) and it is expected to have a smooth and non-slip surface. In the case of space limitation or construction difficulty, up to 8% of slope is acceptable, keeping in mind that assistance may be required.

- Built with sufficient room within the cubicle for a wheelchair to turn around.

- Door width must be at least 80 cm wide (ideally 1.0m).

- Door handle, rails and seat are within reach of people using wheelchairs or crutches/sticks.

- Doors must open outwards to increase usable space inside. Ideally, the doors must be equipped with a hydraulic door closer to close the door automatically.

- Doors' handle to be easy for use (no round handle).

- Other elements must be added when appropriate (e.g. guiding rope for people with visual impairment).

- Handrails to be fixed in the shower and on each side of the toilet seat.

See Annex 5 for typical schematic drawings and specifications of accessible toilets.

Rehabilitation of existing toilets

In some areas, health-care facilities have partial or full toilet blocks that are unusable. These blocks were constructed during the Soviet Union time and followed standards that are out of date. Some other toilets are unusable due to lack of maintenance. Wherever possible, the repair or rehabilitation of such toilets are to be prioritized over new construction. The purpose of refurbishments of these toilets is to improve the facilities so that they meet minimum requirements set in National Standards for sanitation facilities.

In cases that the old buildings do not allow for complying with the standards mentioned in this document, exceptions can be made on case-to-case basis.

Decommissioning of existing toilets

If rehabilitation is not possible and the HCF administration decides to remove them, toilets must be safely decommissioned. Safe decommissioning of toilets is necessary for hygienic reasons, and for avoiding having several unused toilet blocks or septic tanks. Demolishing a toilet block must be carried out by experts from relevant departments (Such as hospital administration with guidance of SES). The required health and safety measures are to be adopted during the demolition process, including the wearing of safety boots, safety masks and helmets, and use of caution tapes to mark the area of work. Where old septic tanks are full, trees may be planted on the location. The demolished superstructures may be re-used, put inside the septic tank or disposed at a waste collection site.

3 HYGIENE

STANDARD 3: HYGIENE

Key Objective: **Offering functioning washing facilities to all patients, staff and visitors at all times, including the provision of water, soap, and hygiene materials in all health-care facilities.**

MONITORING INDICATOR:

Percentage of health-care facilities with hand washing facilities, which have soap and water available at all times.

This section provides minimum standards and guidelines for maintaining effective hygiene practices within the health care environment which must be adhered by HCFs at all levels in order to minimize risks of contamination and reduce public health risks.

Hand-washing Facilities

1. HCF are to have functional hand hygiene facilities which are available in all critical areas such as out-patient departments (OPD), in-patient departments (IPD), emergency, waiting area, lab, maternity unit and all toilets. Hand washing facilities to be provided with hot and cold water supply, adequate drainage infrastructure, paper towels and soap.

2. Preoperative, dressing, delivery rooms, resuscitation, treatment rooms, nurses' posts at the wards of newborns, infectious diseases, tuberculosis, dermatovenerological, purulent-septic, burns, hematological departments, clinical diagnostic and bacteriological laboratories and other rooms which require special attention regime and cleanliness of the hands of the attending medical staff must be equipped with washbasins. This includes the installation of taps with mixers (hot and cold water) equipped with liquid soap and antiseptic solutions. All bathrooms are provided with disposable cotton towels, paper and pedal descents for flushing tanks (paragraph 5.6. "Hygienic requirements for the location, arrangement, equipment and operation of hospitals, maternity hospitals and other medical hospitals").

3. In the wards of newborns, sinks with wide bowls are to be installed (paragraph 5.7. "Hygienic requirements for the placement, arrangement, equipment and operation of hospitals, maternity hospitals and other medical hospitals").
4. All hand-washing facilities are to be connected to internal plumbing systems that lead to either an onsite septic tank or conventional sewer networks.
5. In case of no drainage available, hand-washing facilities are to be connected to soak-away pits. Refer to Annex 2 for a typical design of soak-away pits.
6. HCF are to provide accessible hand washing facilities with soap for children and persons with limited mobility within a maximum distance of 5 meters distance from toilets, waiting areas, and maternity units.
7. Bathing facilities, either within the sanitation facilities or in a separate building, are available for staff and patients to address personal hygiene for all maternity units. Tertiary, Secondary, and Primary health-centers. See Annex 6 for a typical design of external bathing facilities.
8. The hospital administration is responsible to provide soap, hygiene materials and water for hand washing at all times. Water conservation is an important principle for hand washing; taps or faucets must be turned off during the lathering process; and the water flow must be reduced to keep overall consumption low, especially in areas with basic or limited access to water supply.
9. Soap must be available at each hand-washing facility at all times, and be budgeted for at facility level, as part of operation and maintenance plans (O&M).
10. Antiseptic soaps and/or wet alcoholic hand rubs can be used. As a minimum, the availability of soap bars at all hand-washing facilities is necessary.
11. Washing facility/toilet ratio meets the rations set in GNiP RT 31-03-2018 with the minimum following requirements:
    a. Hand washing facilities must be conveniently located throughout the healthcare facility including consultation rooms and all areas where healthcare procedures are performed including delivery rooms, and in convenient locations within toilet units. Hand-washing facilities must be within 5m from any toilet.
    b. Patient's wards (inpatient) with more than 20 beds must be provided with at least two hand washing basins. In case of absence of such facilities, waterless antiseptics to be readily available (wall-mounted) or other alcohol hand rub in small bottles depending on the availability. WHO 2008)
    c. Hand washing facilities must be constructed according to the specifications issued by MoHSP and provided with soap to ensure that facilities are user friendly and safely managed. Hand washing facilities must be cleaned, maintained and provided with good drainage (such as soak-away pits). Clear signs, symbols and health and hygiene messages to encourage the use of hand washing facilities must be provided.

For hand-washing facilities in external areas of HCF, concrete, stainless steel, and/or galvanized iron basins are to be used to reduce costs and vandalism.

Taps and faucets must be robust and well-fixed to prevent vandalism and theft.

For facilities with limited water availability, water used for hand washing will be collected and reused for toilet flushing (promoting fit-for-purpose water use).

Environmental cleaning

Toilets must be clean as noted by absence of waste, visible dirt, excreta, insects and stagnant water.

All walls and floors of the toilet block are cleaned with water and bleach three times a day.

Cleaning materials (i.e. water, soap, disinfectants, mops, scrub brushes, etc.) must be made available for performing regular cleaning.

Cleaning equipment (buckets, basins, rags, mops, etc.) must be used strictly for its intended purpose, processed, washed and stored in a dedicated room (in the working area) in a dry, clean form (clause 10.1.2. "Hygienic requirements to the placement, arrangement, equipment and operation of hospitals, maternity hospitals and other medical hospitals").

A regular cleaning and maintenance schedule to be in place for sanitation facilities to ensure its cleanliness and functionality at all times.

All toilets, urinals and showers must be cleaned as they become dirty and at least three times a day using disinfectants approved for use in the prescribed manner (clause 4.2. "Hygienic requirements for the placement, arrangement, equipment and operation of hospitals, maternity hospitals and other medical hospitals").

For toilets and latrines in which high contamination is expected, a disinfectant such as 0.5% bleach solution or 1% phenol solution must be added to the cleaning solution before usage.

As per the National Guidelines for the Prevention of Infections in Medical Institutions of the Republic of Tajikistan" approved by order of the MOHSP RT No. 1119 of 27.12.2014), the technical staff of health facilities that are engaged in cleaning must know and comply with the following general principles of cleaning:

- Washing is essential before disinfection, as dirt, debris and other materials can reduce the effectiveness of many chemical disinfectants;

- Cleaning solutions must be selected depending on the purpose of use, strength, safety and cost;

- Cleaning must always be carried out from the least polluted area to the most polluted area, as well as from top to bottom, so that the most polluted areas and debris falling on the floor will be removed last;

- to prevent dust, debris and microorganisms from entering the air and onto clean surfaces, avoid sweeping, mopping and dusting dry;

- When using disinfectants, follow the instructions for preparing solutions. Too much or too little water can reduce the effectiveness of disinfectants;

- Cleaning methods and cleaning schedules in writing must be based on the type of surface, the amount and type of contamination present, and the purpose of the site.

Cleaners must understand their important role and be trained on cleaning practices, including making disinfectant solutions (Chlorine-based or other disinfectants). They must be provided with adequate cleaning supplies and personal protective equipment. A refresher training on environmental cleaning and hygiene must be organized by the Health-care Facility level at least once a year to ensure compliance with standards and norms.

At a minimum, personal protective equipment for cleaners must include rubber gloves, rubber boots and impermeable aprons. When there is a risk of splash in the face, cleaners must wear eye protection and surgical masks.

Laundry Facilities

In health-care facilities soiled linen harbors pathogenic microorganisms, and hence the risk of actual disease transmission is inevitable. Proper handling of linen will help to reduce possible risks of transmitting diseases causing microorganisms from contaminated patient linens to healthcare facilities workers and also reduce hospital acquired infections from linens to patients.

- *It is expected to have at least one laundry facility in each hospital and healthcare facility (tertiary and secondary levels). Laundry facilities are to be well designed with enough space to allow sorting, washing and temporary storage of clean linen.*

- *Good drainage system must be in place and all laundry facilities must be dry at all times to avoid the accumulation of moisture. In addition, proper electrical wiring is to be in place in case machines do laundering.*

- *Laundry facilities must have sufficient natural ventilation and where the climate allows, large opening windows, skylights and other vents to optimize natural ventilation.*

- *Workload of laundering can be projected at an average of 5 kg per bed per day plus 10kg for each operation or delivery.*

- *For each 50 beds with an average of 5kg/bed/day of laundering workload, functioning at 8 hours/day, at least a 30kg washing-machine capacity must be available.*

- *Ideally, a laundry unit are to be situated separately from the hospital departments. It must be on the ground floor and in a building that is connected or adjacent to water and electricity supply. Both hot and cold water are to be provided to laundry units.*

- *Laundry units are to be located in an area that has ample highlight and natural ventilation.*

- *A separate hand hygiene sink for staff with wall mounted dispensers for soap and paper towels must be provided.*

- *The floors and walls of laundry facilities must be fully tiled (ceramic material) and free of cracks and holes to avoid any leakages and moisture.*

- *All laundry facilities must be cleaned and dried at least once a day.*

- *For more information, and for a typical design of a separate laundry-facility, see Annex 7.*

4

HEALTH CARE WASTE MANAGEMENT (HCWM)

STANDARD 4: HEALTH-CARE WASTE MANAGEMENT

Key objective: **All health-care facilities safely segregate, store, collect, transport, treat and dispose generated health-care waste.**

MONITORING INDICATOR:

The percentage of HCF that safely segregate, store, collect, transport, treat and dispose of healthcare waste.

Safe handling and management of health care waste are fundamental for the provision of quality, people-centered care, protecting patient and staff safety and safeguarding the environment. As part of broader WaSH and infection prevention and control (IPC) efforts taken in Tajikistan, safe management of health care waste reduces health care-related infections, increases trust and uptake of services, increases efficiency and decreases cost of service delivery in health-care facilities.

In line with the UN Sustainable Development Goals (SDG), particularly Goal 3 on health, Goal 6 on safely managed water and sanitation and Goal 12 on sustainable consumption and production, the WHO/UNICEF "Global Action Plan on WaSH in health care facilities" aims to ensure that all health care facilities have basic WaSH services by 2030 (WHO/UNICEF, 2016). This includes safe and environmentally sound health care waste management involving segregation, collection, transportation, treatment and waste disposal.

The MoHSPP in Tajikistan recognizes the importance of HCWM, and emphasizes that the practice of medical waste management is aimed at implementing the environmentally sound management of hazardous waste, as well as the implementation of the best environmental practices and best available technologies in accordance with the Basel and Stockholm conventions and relevant national regulations and requirements.

The Republic of Tajikistan has signed various international conventions related to the management of medical waste, such as the Rotterdam, Vienna and Stockholm conventions, as well as the agreement on the transport of hazardous waste. "Basel

Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal".

In 2021, the "Health Protection Strategy of the Republic of Tajikistan until 2030" was developed. It defines the strategic directions for the reform of the health sector, further ways of developing the health sector to protect the health of the population and establishes the national priorities of the country, reflected in the Constitution, the National Development Strategy.

The strategy defines the strategic / program goals and objectives. Effective healthcare management is defined as one of the strategic goals. The Public Health and Healthy Lifestyle Development strategy focuses on disease prevention, health promotion and longevity, and defines specific goals and activities to achieve these goals. One of the goals is to “strengthen the leadership and training role of the Ministry of Health and Social Protection in improving health and waste management in healthcare facilities, both in the healthcare sector and abroad.

To achieve this goal, the following waste management activities are planned:

- Development of epidemiological surveillance standards for effective waste management in health care facilities in line with WHO guidelines[2] . It is important to note that in this context, in 2021, with the participation of WHO experts, the “Sanitary norms and rules for the collection, neutralization, transportation, storage and disposal of waste in medical institutions” were developed and by order of the Ministry of Health and Social Protection of the Republic of Tajikistan dated May 14, 2021, No. 410. The Ministry approved this document as “as (“SanPiN 190.010.090 -Sanitary norms and rules for the collection, neutralization, transportation, storage and disposal of waste in medical institutions").

This SanPiN was developed taking into account international requirements and principles established in the direction of medical waste management. Currently in the Republic of Tajikistan SanPiN 190.010.090 defines the rules for the collection, neutralization, transportation, storage and disposal of all types of medical waste in medical institutions.

Given the specificity of some HCWM National standards, this section comes to provide guidance in line with other National policies and strategies from health sector and other sectors; legislations and international conventions related to the management of HCW. The minimum standards and guidelines are structured to operate within the framework of the national development strategies and policies.

[2] Assessing healthcare waste management during the covid-19 pandemic. UNDP, April 2021.

Standard guidelines for HCWM

The term medical waste refers to all types of waste generated by different levels and types of health-care facilities in Tajikistan, including but not limited to, primary and secondary health-care centers, dispensaries; emergency medical centers; blood transfusion centers; long-term care hospitals; medical laboratories and any other medical facility that generates health-care and medical waste.

All items classified as health-care waste must be handled and disposed of according to colour coding and standards stipulated in the local guidelines of Sanitary norms and rules for the collection, neutralization, transportation, storage and disposal of waste in medical institutions.

Between 75% and 90% of the waste generated by healthcare workers is commonly referred to as "non-hazardous" or "general healthcare waste". They are produced mainly in the course of administrative, kitchen and household functions in medical institutions, and packaging waste and waste generated during the maintenance of buildings of medical institutions can also be included in this category. The remaining 10-25% of medical waste is considered "hazardous" and may pose various environmental and health risks.

Classification of health-care waste

As per the National Standards of HCWM in Tajikistan set in SanPiN 190.010.090, health-care waste is divided into 5 different classes as below:

- class A: general non-hazardous waste;
- class B: infectious waste, sharps waste and pathological waste;
- class C: highly infectious waste;
- class G: pharmaceutical and chemical waste;
- class D: radioactive waste (paragraphs 10 and 11 of SanPiN 190.010.090. "Sanitary norms and rules for the collection, neutralization, transportation, storage and disposal of waste in medical institutions").

These classes are described in the table below, which also provides descriptions of these categories under “non-hazardous and hazardous” medical wastes.

Table 4.1. Classification of health-care waste (with examples)

Class	Waste Category	Description
Non-hazardous medical waste		
A	General waste	Wastes that do not include any particular biological, chemical, radioactive or physical hazard, e.g. food waste from all departments of healthcare facilities (excluding patient waste/infectious disease departments), recycled paper, glass and plastic, small debris after cleaning rooms, construction waste.
Hazardous medical waste		
B	Infectious waste	All wastes suspected of containing pathogens and presenting a risk of disease transmission, such as waste contaminated with blood and other body fluids; waste, including food, sputum, excrement, and any materials that have been in contact with infected patients.
	Sharps	Used or unused sharps, such as hypodermic, intramuscular, intravenous or other needles; disposable syringes; infusion sets; scalpels; pipettes; knives; blades; broken glass.
	Pathological waste	Human tissues, organs or fluids; body parts; unused blood products.
C	Highly infectious waste	Means all waste materials containing, blood, fluids with **viable biological agents** from infected person or artificially cultivated in significant elevated numbers; Waste from infected patients in isolation wards, cultures and stocks; dishes, devices used to transfer, inoculate and mix cultures of infectious agents. In case of notifiable highly infectious diseases i.e. Viral Hemorrhagic fever, such waste materials are to follow extra treatment procedure.
D	Radioactive waste	These are materials contaminated with radionuclides. They are produced because of procedures such as in vitro analysis of body tissue and fluid, in vivo organ imaging and tumor localization, and various investigative and therapeutic practices. includes liquids, gas and solids contaminated with radionuclides whose ionizing radiations have genotoxic effects. The ionizing radiations of interest in medicine include X- and y-rays as well as cx- and B- particles. An important difference between these types of radiations is that X-rays tubes only when generating equipment is switched on whereas y-rays, cx- and B- particles emit radiations continuously.

G	Pharmaceutical waste, cytotoxic waste	Pharmaceutical waste include expired, unused, spilt and contaminated pharmaceutical products, prescribed and proprietary drugs, vaccines and blood sera that are no longer required, and, due to their chemical or biological nature, need to be disposed of carefully. The category also includes discarded items heavily contaminated during the handling of pharmaceuticals, such as bottles, vials and boxes containing pharmaceutical residues, gloves, masks and connecting tubes. Cytotoxic waste containing substances with genotoxic properties, such as waste containing cytotoxic drugs (often used in cancer therapy); genotoxic chemicals
	Chemical wastes	Waste containing chemicals, such as laboratory reagents; film developer; disinfectants that have expired or are no longer needed; solvents; wastes with a high content of heavy metals, such as batteries; broken mercury-containing thermometers and blood pressure gauges.

Segregation and collection of health-care waste

Segregation of health-care waste must be done at the point of waste-generation according to the types of waste generated, i.e. sharps, highly infectious, infectious and noninfectious.

All items classified as health-care waste in the previous section are expected to be handled and disposed of according to colour coding and standards stipulated in local guidelines and as described in table 4.2 below. Health-care facilities are expected to provide adequate coloured and coded containers with liners and covers for HCW segregation at all times.

Table 4.2. Packaging, colour coding and collection frequency

Class	Waste category	Container color and labeling	Container type	Collection frequency
A	General medical waste	Black or white, marked on the container: "Class A waste"	A plastic bag is placed inside container or the container is isinfected after use	When the container is three-quarters full or at least once a day
B	Infectious waste	Yellow, with biohazard symbol and marked on container "Class B waste"	not leaking a hard plastic bag is placed inside the container	When the container is three-quarters full or at least once a day
	Sharp waste	Yellow, with biohazard symbol	container with hard, puncture-resistant walls	When it is full at specified mark, line, or three-quarters full
	Pathological waste	Yellow, with biohazard symbol	not leaking a hard plastic bag is placed inside the container	When the container is three-quarters full or at least once a day
C	Highly infectious waste	Red, with biohazard symbol and marked on container "Class B waste"	not leaking a hard plastic bag is placed inside the container	When the container is three-quarters full or at least once a day
D	Radioactive Waste	Marked with a radiation hazard symbol	Lead box	On demand
G	Chemical and pharmaceutical waste	Any color other than yellow or red, and with the appropriate hazard symbol	plastic bag or hard container	On demand

- Standard colour coded containers/bins for each category of waste are to be provided by HCF.
- The mixing of non-hazardous and hazardous waste is not permitted. If mixing occurs, all waste contained together in, shall be classified and treated as hazardous waste. See **Annex 9** for an illustration table.
- Staff engaged in the segregation of HCW shall wear appropriate personal protective equipment at all times of interaction with wastes.

Guidelines for onsite-transportation of Healthcare Waste

1. For efficient and effective collection and transportation of Health Care Waste, authorities or health facilities management shall:

2. Provide standard equipment for collection and transportation of healthcare waste.

3. Provide appropriate personal protective equipment.

4. Supervise staff to adhere on use of personal protective equipment.

5. All infectious waste shall be collected on daily basis.

6. Hazardous HCW and non-hazardous HCW shall be collected on separate trolleys.

7. The collection/transport route shall be the most direct and shortest one from the collection point to the central storage facility or disposal point, and must avoid passing through /or be in areas where food preparation is done.

8. Health-care waste must be transported using color coded/labeled transportation equipment that are not used for any other purpose.

9. Collection times must be fixed and reliable.

10. The collected waste shall not be left even temporarily anywhere other than at the designated central storage facility.

11. Health-care waste shall not be transported by hands to avoid the risk of accident or injury.

12. All bin liners and /or containers of waste must be marked to identify the unit/ward where the waste was generated.

13. Spare trolleys/wheeled bins shall be available in case of breakdowns and maintenance. The trolleys/ wheeled bins shall be cleaned and disinfected after every use.

14. All waste bag seals must be in place and intact at the end of transportation.

15. There must be separate, secured, storage rooms to maintain segregation of:

    - Radioactive waste
    - Waste containing Mercury

Health Care Waste storage

For efficient and effective storage of Health Care Waste, authorities or health facilities shall:

1. Provide a secured and fenced HCW storage bay.
2. The bay must have an impermeable, hard-standing floor with good drainage system, easy to clean and disinfect in line with standards and procedures for HCWM.
3. Ensure separate labeled storage compartment for various types of HCW.
4. Provide a separate compartment for radioactive waste storage.
5. Infectious waste must be stored not more than 48 hours from the time of generation.

Guidelines for HCW disposal methods

General non-hazardous and hazardous waste that require direct disposal must be known by relevant health-care workers at the healthcare facilities. The following minimum standard guidelines are to be followed for disposal of non-hazardous waste and hazardous waste that require direct disposal.

Non-hazardous waste

- Non-hazardous waste must be disposed of in designated areas outside of medical facilities.
- Non-hazardous waste must be regularly collected by the municipality, or medical facilities must independently arrange for its transportation to a known and safe public place for final disposal.
- In case there is no public disposal site the authority shall establish a designated disposal site for non-hazardous that meet public health and environmental requirement.
- Open burning is strictly not allowed for all types of waste.
- The designated disposal site must be secured for unauthorized access and fenced. (clause 48 SanPiN 190.010.090).

Hazardous waste disposal options

Highly infectious waste (class B) must be treated before final disposal (clause 28 of SanPiN 190.010.090). When disposing of various types of hazardous waste, the following minimum standard recommendations must be observed:

Pathological waste disposal

Every healthcare facility must have a standard designated placenta pit within the facility premises but separate from health-care departments. Placental pits must be located in certain places on the territory of health facilities to avoid contamination of groundwater, closed and fenced for safety reasons (paragraph 49 of SanPiN 190.010.090). (See Annex 10 for designs).

Disposal of organic and pathological waste. The destruction of said waste may be related to sociological, cultural, religious and aesthetic norms and practices. The traditional option is internment (burial) in cemeteries (WHO, 2014). Placenta pits can also be an effective solution in resource-limited settings. They must be located in certain places to avoid contamination of groundwater. The bottom of the pit to be at a minimum of 1.5 meters above groundwater table level. Placenta pit areas must be closed and fenced for safety reasons. In cases where the water table is high, the horizontal distance of the pit design may be increased to avoid reaching water table levels. Pits could optionally also be elevated to maintain the vertical distance above high water table levels.

Placenta may also be placed in red thermal bags and incinerated at temperatures equal or higher than 1100 Celsius degrees in case placenta pits are full or not available.

Pathological waste, including placenta, can also be landfilled when there are no other disposal options. But, such disposal must be carried out in a predetermined area in order to prevent contact with pathological waste by scavengers or other personnel involved in waste processing. These wastes also need to be covered with a layer of soil within 24 hours.

In case of human remain must be cremated or buried in public cemetery. (clause 49 SanPiN 190.010.090).

Disposal of hazardous ash

Fly ash and bottom ash from incineration is generally considered hazardous, because of the possibility of having heavy metal content and containing dioxins and furans.

Hazardous ashes must be disposed of in sites centralized designed for hazardous wastes, such as well-contained ash-pits that are usually constructed near incineration units. See Annex 11 for a typical cross section of the pit.

In the absence of designated disposal sites, the health0care facilities must construct a standard ash pit within or offsite the facility premises.

Sharp waste disposal

Even after sterilization, sharp waste may still pose physical risks. The health-care facility is expected to do the following:

- Sterilized sharp waste can be disposed of in safe sharp pits on the health care facility premises or encapsulated by mixing waste with immobilizing material like cement before disposal.
- In case recycling opportunity exist sharp waste must be sterilized and taken for recycling with licensed entities.
- Where high technology for smelting and incineration exist, sharp waste ash can be disposed of by burial method and must be done under the supervision of licensed entities.
- Incineration facilities and any burial pits must be located at least 15 meters away from any nearby populated area.

Additional HCWM considerations

1. The chief doctor of the hospital and the head of the medical facility is fully responsible for the management of medical waste in the medical facility. The chief doctor is expected to take the initiative to establish an infection control commission, which includes a team, in particular, a responsible person responsible for the management of health-care waste is appointed. The health-care staff responsible for the management of health-care waste is to be appointed by the chief doctor of the hospital. (clause 12 of SanPiN 190.010.090).

2. All HCF must ensure to make site free from, health care waste (including placenta) and other waste that can alter water quality or form any type of risk on patients, staff and visitors.

3. All areas of final HCF storage and/or disposal must be fenced properly.

4. The head of an entity engaged in medical and / or pharmaceutical activities approves an instruction indicating responsible employees and procedures for handling medical waste in this organization. Responsible health-care staff manage the collection of waste at the places of their generation, calculate the number of disposable containers (or other appropriate containers) in accordance with the categorized classes and ensure their integrity (in plastic packaging, special containers and other utensils) (paragraph 20 SanPiN 190.010.090).

5. As part of the wider aspect of WaSH infrastructure management, there must be clear description of staff roles on management of sanitation infrastructure

(including HCWM) and services. There must be a committee consisting of a manager, supervisors(s), and attendant(s) with assigned the responsibility of maintaining sanitation infrastructure depending on facility level.

Incineration

For onsite incineration treatment technology, Waste treatment technology) for the treatment of infectious and sharps waste is built to the appropriate standards, well maintained, functional and of a sufficient capacity for waste generated.

It is important to consider that any incineration unit must be located in an area with a minimum distance of 15 meters from any nearby-populated buildings.

Incinerators are to operate on a high-temperature (from 850 ° C to 1,100 ° C) dry oxidation process in which organic and combustible waste is converted into inorganic and leads to a significant reduction in volume and the Stockholm Convention, technologies should be used so that emissions during combustion reach equivalents (TE')/m^3 of dioxins and furans.

When using the incineration method, the main primary measures, or criteria, are the following: the presence of a two-stage combustion chamber (850 ° C / 1100 ° C) and an auxiliary burner, a hardening time for air in the second chamber of 2 seconds, sufficient oxygen content inside the chamber and high turbulence of exhaust gases. gases. The main primary criteria described here should be the minimum standard; / By applying primary measures, productivity of about 400 ng TEQ/m^3 of dioxins and furans can be achieved (UNEP, 2013a). Beyond the minimum standards to be followed which will help achieve the requirements of the Stockholm Convention. To achieve a level of 0.1 ngTEQ /m^3 , pre - tuned flue gas cleaning systems (secondary measures) must be used . Such technologies can be relatively expensive for small to medium-sized incinerators (incinerators) and should be taken into account at the planning stage. In addition, exhaust air and wastewater resulting from filtration processes are also considered hazardous waste and therefore require appropriate treatment.

See below for recommended specifications of typical 0.4 up to 1.35 cubic meter.

incinerators, in addition to a recommended maintenance schedule:

Recommended Incinerator Technical Standards

- **Incinerator type:** Controlled-air incinerators. Also known as starved-air incineration, two-stage incineration, or modular combustion.
- First stage combustion temperature to be between 760 and 980 Celsius degrees.

- Secondary chamber temperatures must be able to handle 980 to 1,200 C' degrees.
- **Burn rate**: The incinerator should be able to burn between 20 to 110 kg/hour.
- **Overall Dimensions:** Max of 3 meters in Length, Max of 2 meters in Width, and not higher than 2.6 meters.
- **Volume of incineration chamber:** not less than 0.4 m3, and not more than 1.35 m3 (based on the calculation of the volume of facilities hazardous waste and the time intended for incineration per week).
- **The weight of post-incineration ash**: Must not be more than 3%.
- **Number of primary and secondary chamber burners:** one per chamber.
- **Fuel tank volume:** more than 100 Liters.
- **Fuel consumption rate**: Not more than 15 Liters/hour.
- **Control panel:** Must be easy to handle with limited training and operational requirements.
- It is recommended that any incinerator provided have options so that waste feed and ash removal can be manual or automatic.

Recommended Maintenance schedules:

Activity frequency	Maintenance task
Hourly	- Inspect ash removal conveyor and water levels in quench pit.
Daily	- Check opacity, oxygen and temperature monitor. - Clean under-fire air ports, ash pit and sump. - Inspect limit switches and door seals.
Weekly	- Clean heat recovery boiler tubes, blower intakes, burner flame rods and sensors, and heat recovery induced draft fans (if available) - Lubricate latches, hinges, hopper door pins, etc.
Biweekly	- Check hydraulic fluid, lubricate ash conveyors. - Clean fuel trays, burners and control panels.
Monthly	- Inspect surfaces and refractories internal ram face, and lights. - Clean secondary chamber floor, lubricate blowers and fans.
Semi-annual	- Inspect hot surfaces; clean and lubricate chains.

Autoclaves

Steam-based treatment technologies are widely used to kill pathogens contained in infectious and sharps waste by using heat (thermal energy) for a certain period of time, depending on their volume and content. As a rule, low-temperature thermal waste treatment methods operate at temperatures from 100°C to 180°C, and disinfection processes take place in a humid or dry warm environment. Wet (or wet) heat treatment involves the use of steam to disinfect waste, and is usually performed using an autoclave or steam cleaning system (WHO recommendations, 2014).

The wet heat treatment should be done in autoclave. The duration of the medical tools treatment with t=100-180C minimum 1.5 hours.

See **Annex 12** for schematic drawing of cyclic autoclave device with recommended specifications.

Financial Resources

- The authorities shall solicit fund from district administration to ensure availability of adequate financial for HCWM.
- Every health-care facility must prepare an annual plan and budget for healthcare waste management.
- Every health-care facility must allocate funds for the management of healthcare waste and sanitation services.

Materials and Equipment

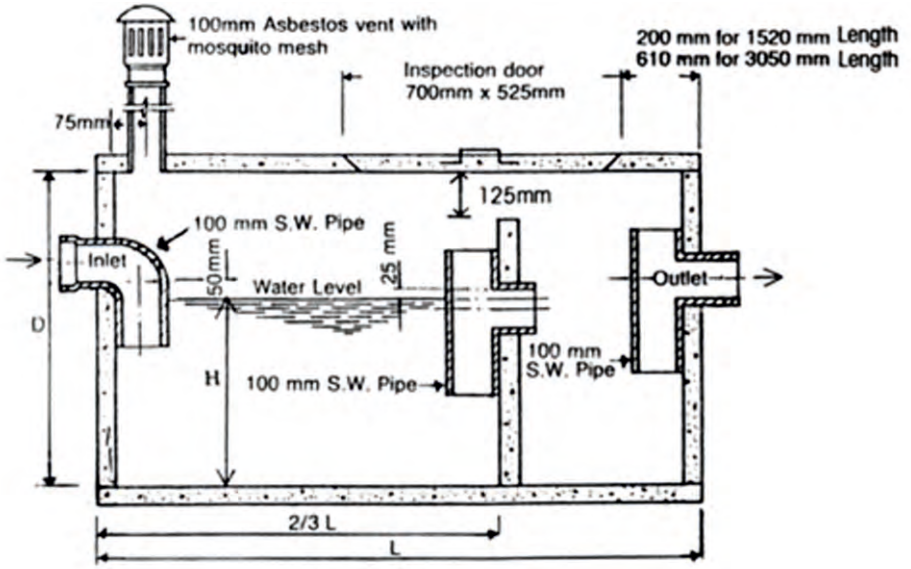
Health-care facilities administration must ensure that materials and equipment for health care waste handling and treatment must be supplied on regular bases without any shortage in stocks.

Each health-care facility must have a plan for preventive maintenance of waste management equipment and infrastructure.

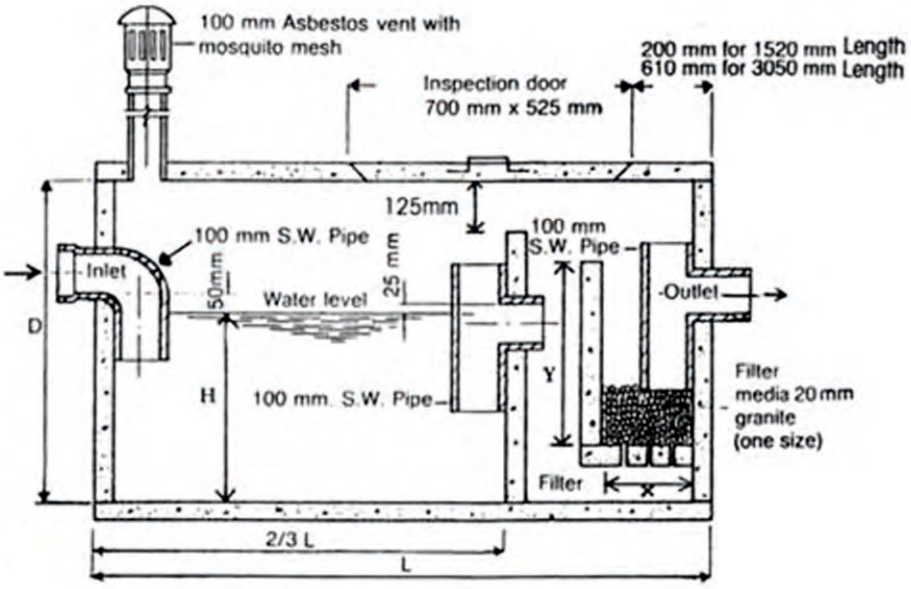
Annexes:

Annexes: Typical designs and figures

Annex 1: Typical septic tank in cross-section



Cross-section (without filter)

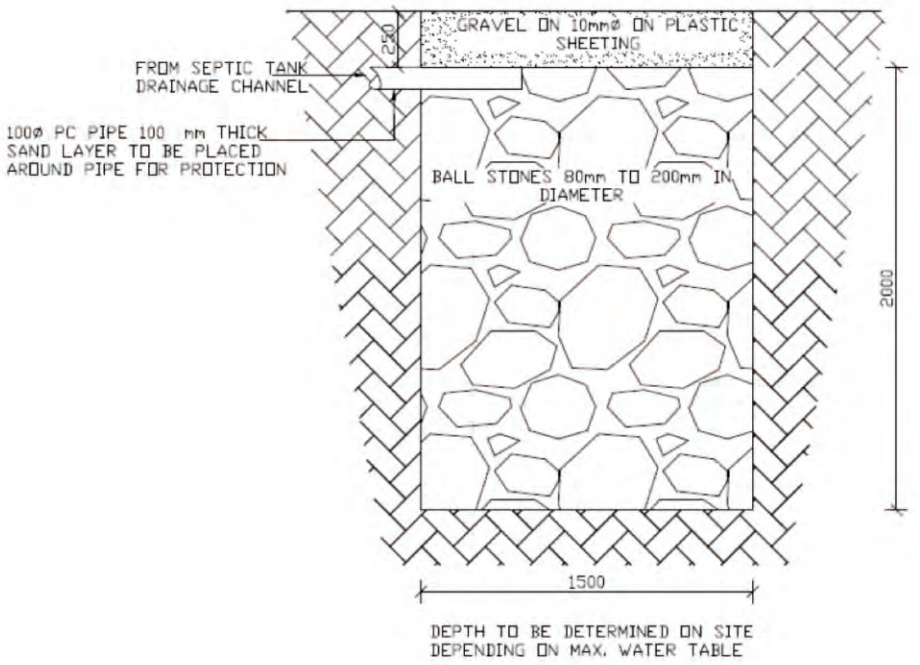


Longitudinal Section (with filter)

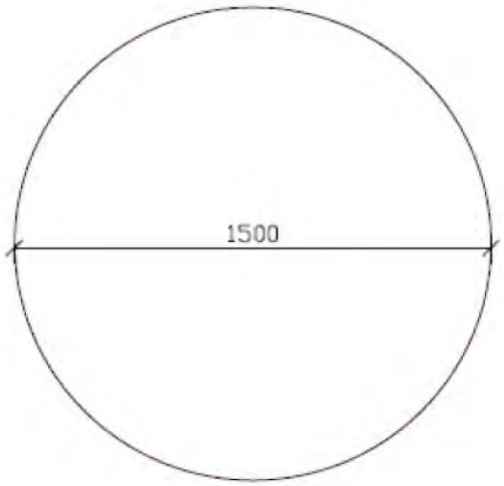
Cross-section (with filter)

Annex 2: A typical design of a soak-away pit

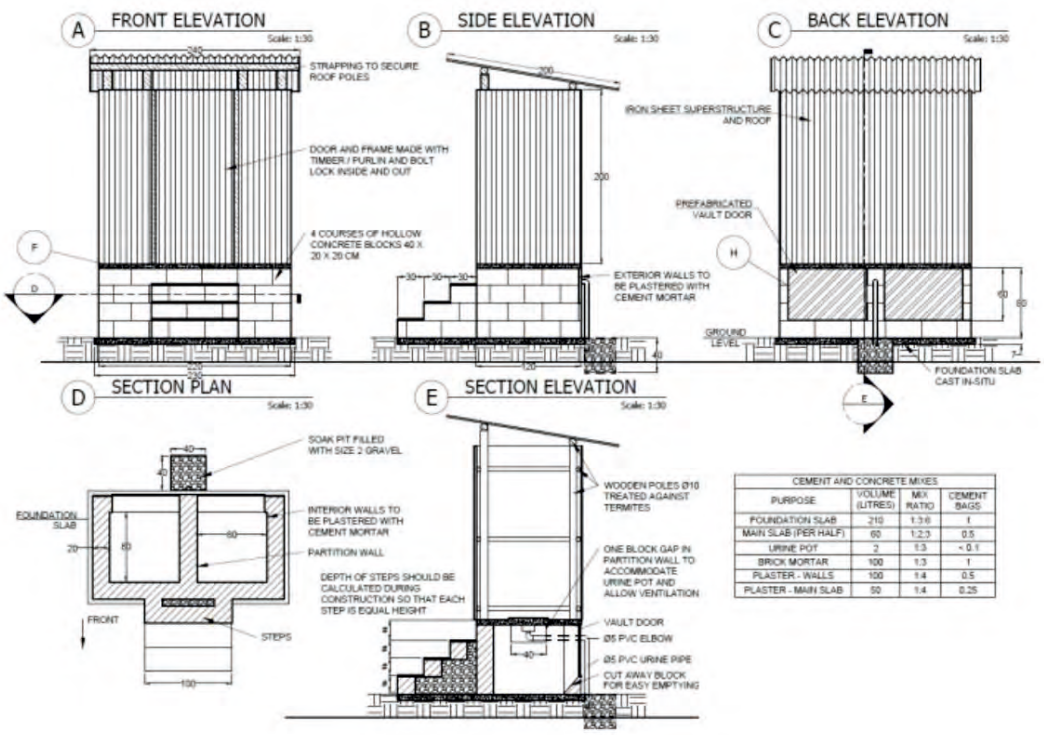
Typical Soak away pit Design - Pit



Typical Soak away pit Design - Plan



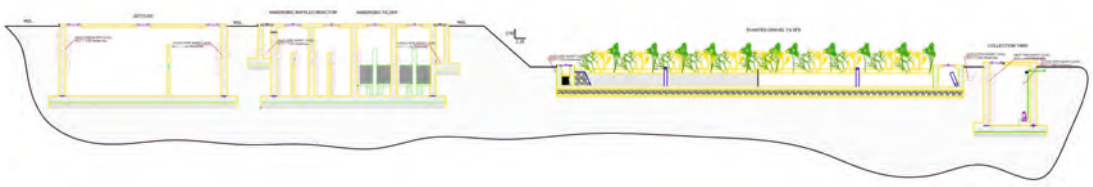
Annex 3: Example of an Ecological Sanitation toilet (UDDT)



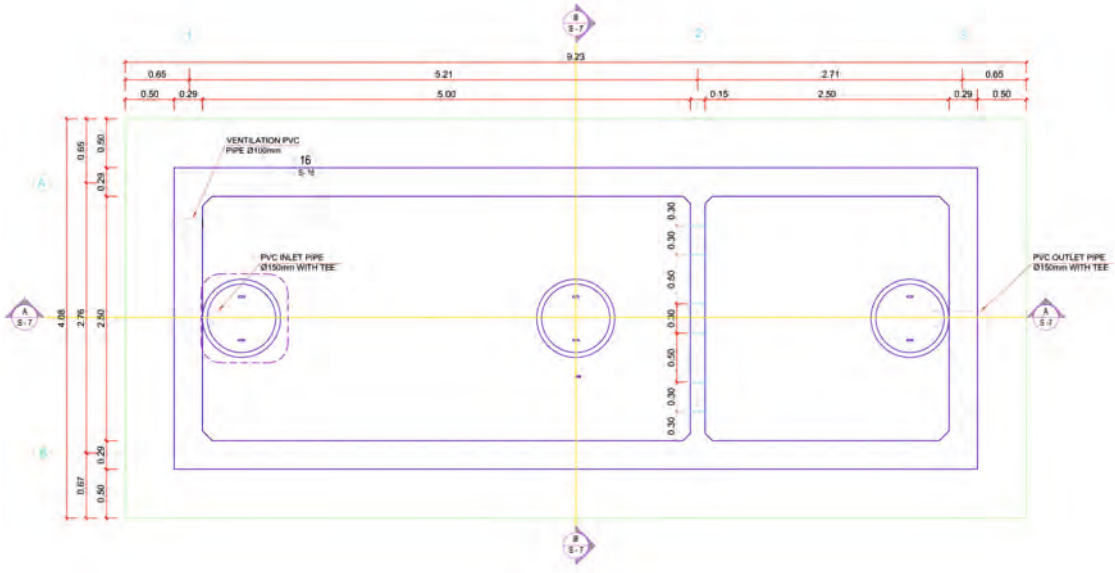
CEMENT AND CONCRETE MIXES

PURPOSE	VOLUME (LITRES)	MIX RATIO	CEMENT BAGS
FOUNDATION SLAB	210	1:3:6	1
MAIN SLAB (PER HALF)	60	1:2:3	0.5
URINE POT	2	1:3	< 0.1
BRICK MORTAR	100	1:3	1
PLASTER - WALLS	100	1:4	0.5
PLASTER - MAIN SLAB	50	1:4	0.25

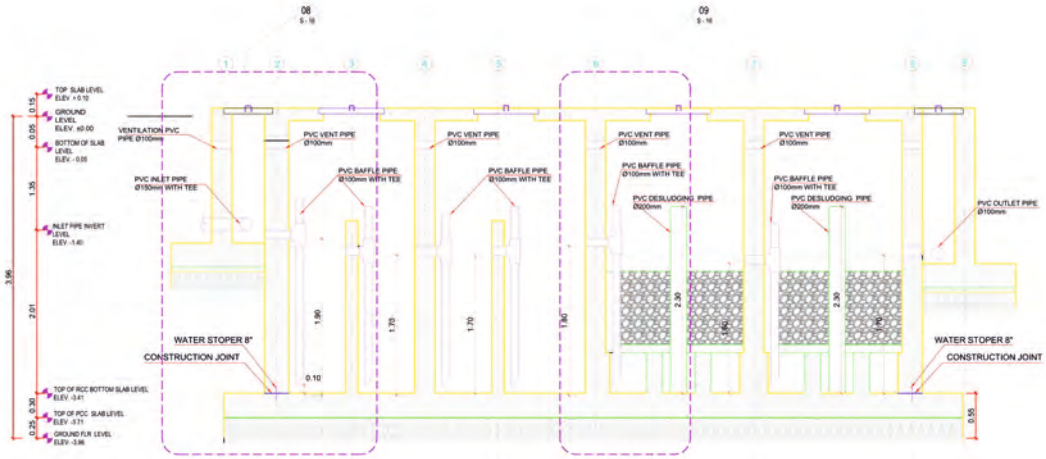
Annex 4: Example of DEWATS from OXFAM



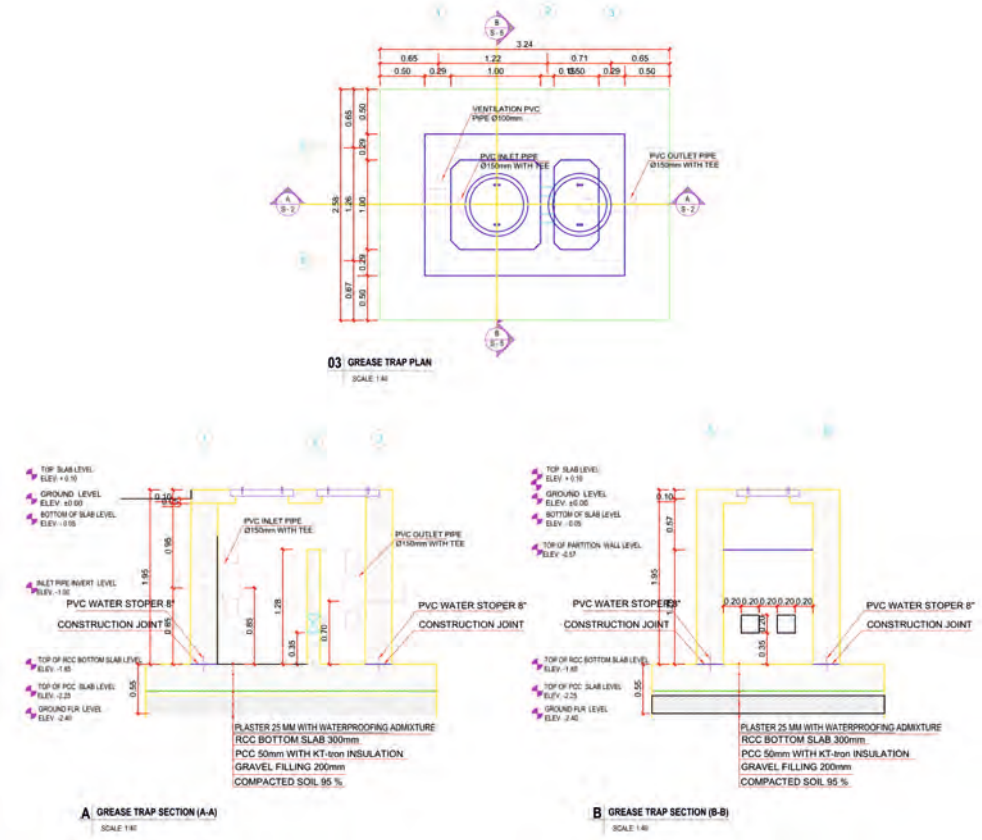
Annex 4.1. DEWATS Settler in section view



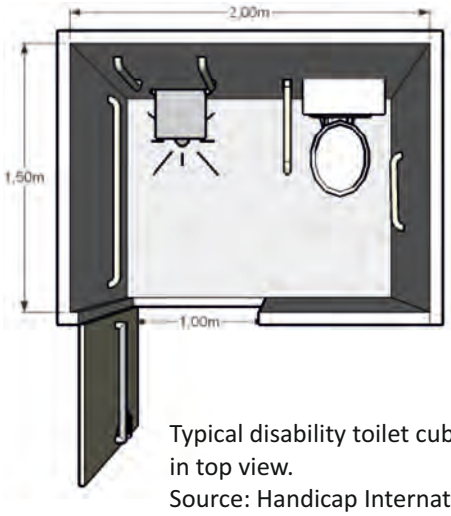
Annex 4.2: ABR and AF in section view



Annex 4.3 DEWATS Grease Trap in plan and section views

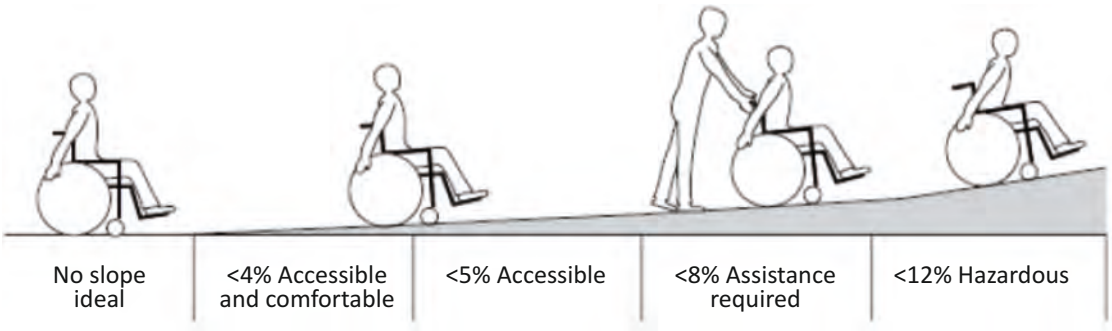


Annex 5: Typical drawings and specifications of accessible toilets



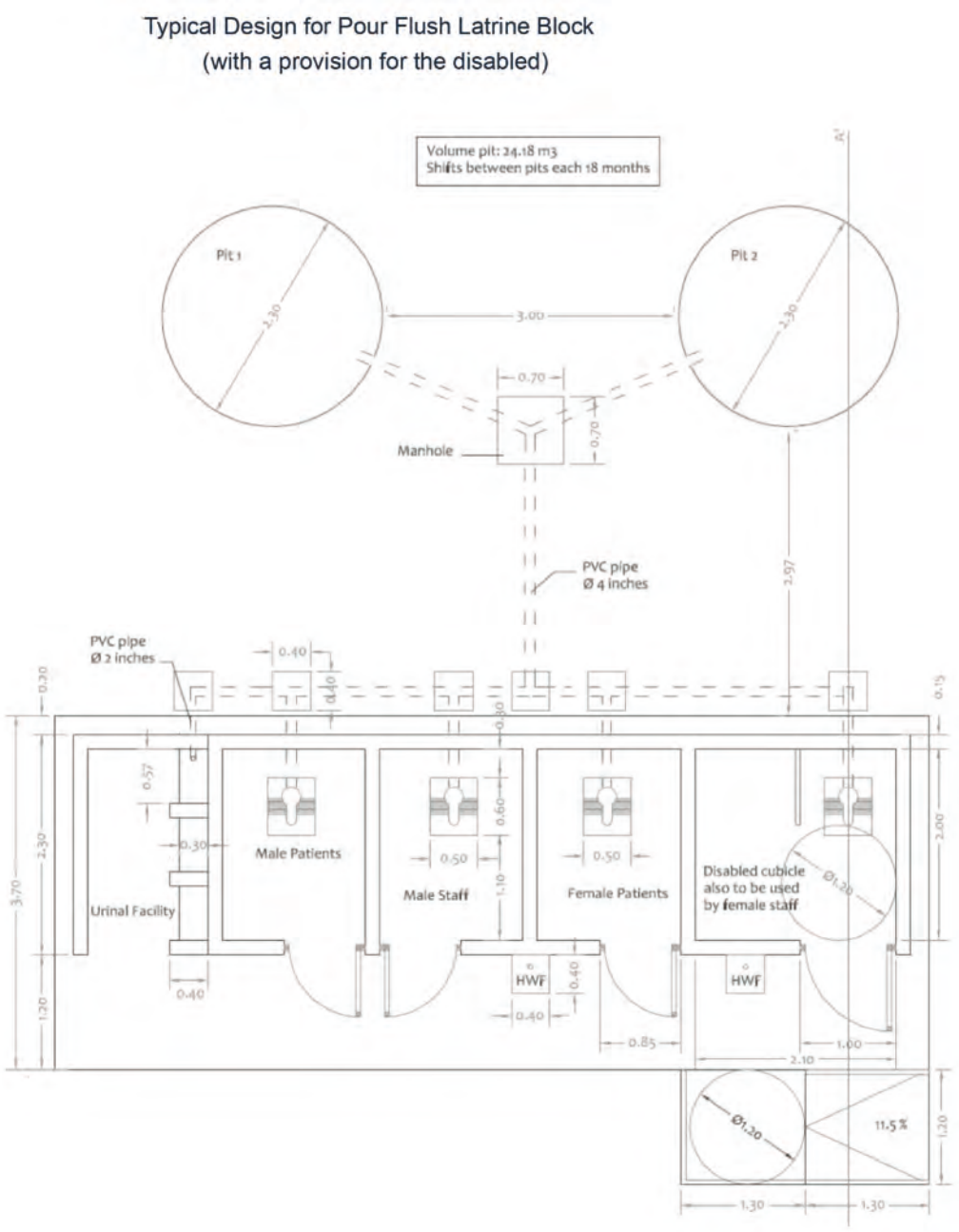
Typical disability toilet cubicle in top view.
Source: Handicap International

Typical inclined ramp.
Source: Handicap International



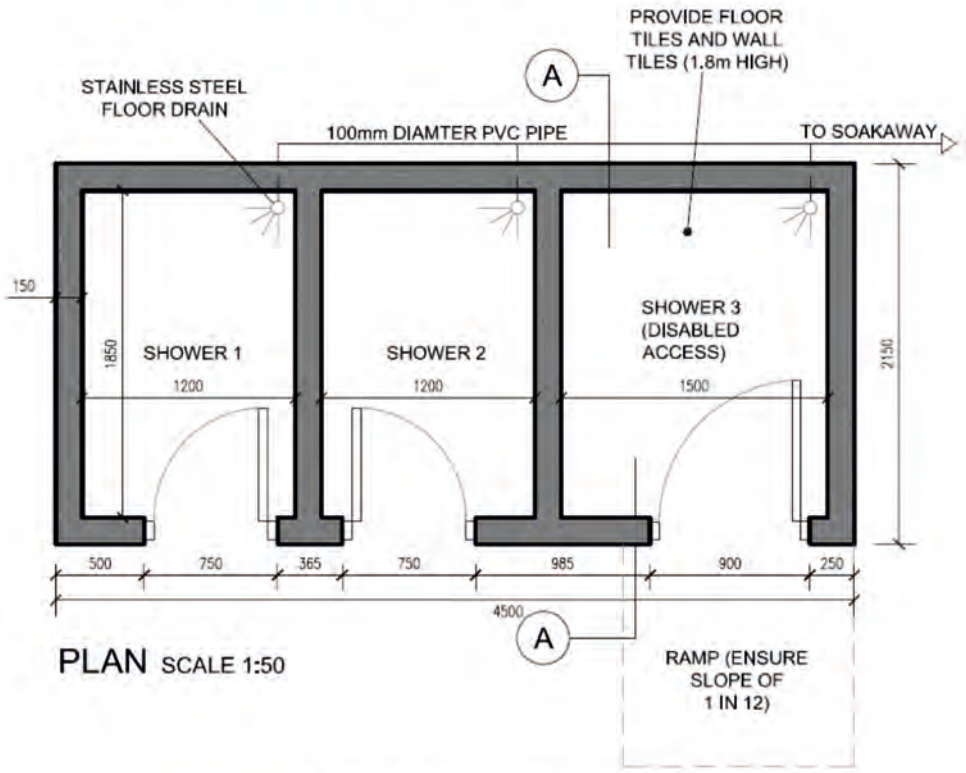
Slope percentages

Annex 5.1: Typical design for a pour-flush facility including a disability unit

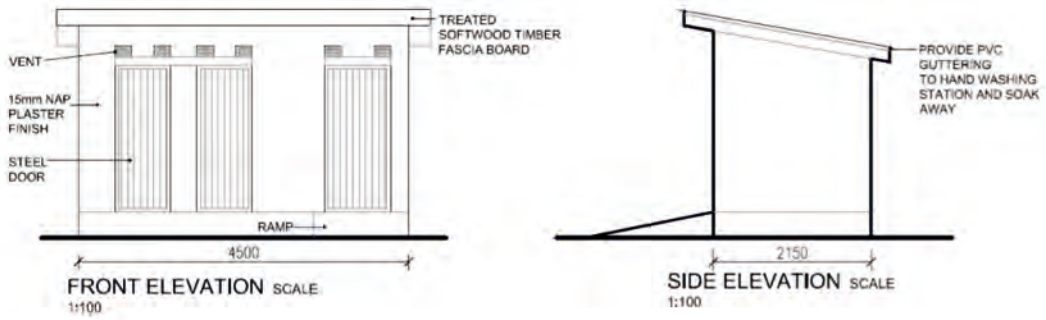


Annex 6: A typical design of external bathing facilities (Plan View)

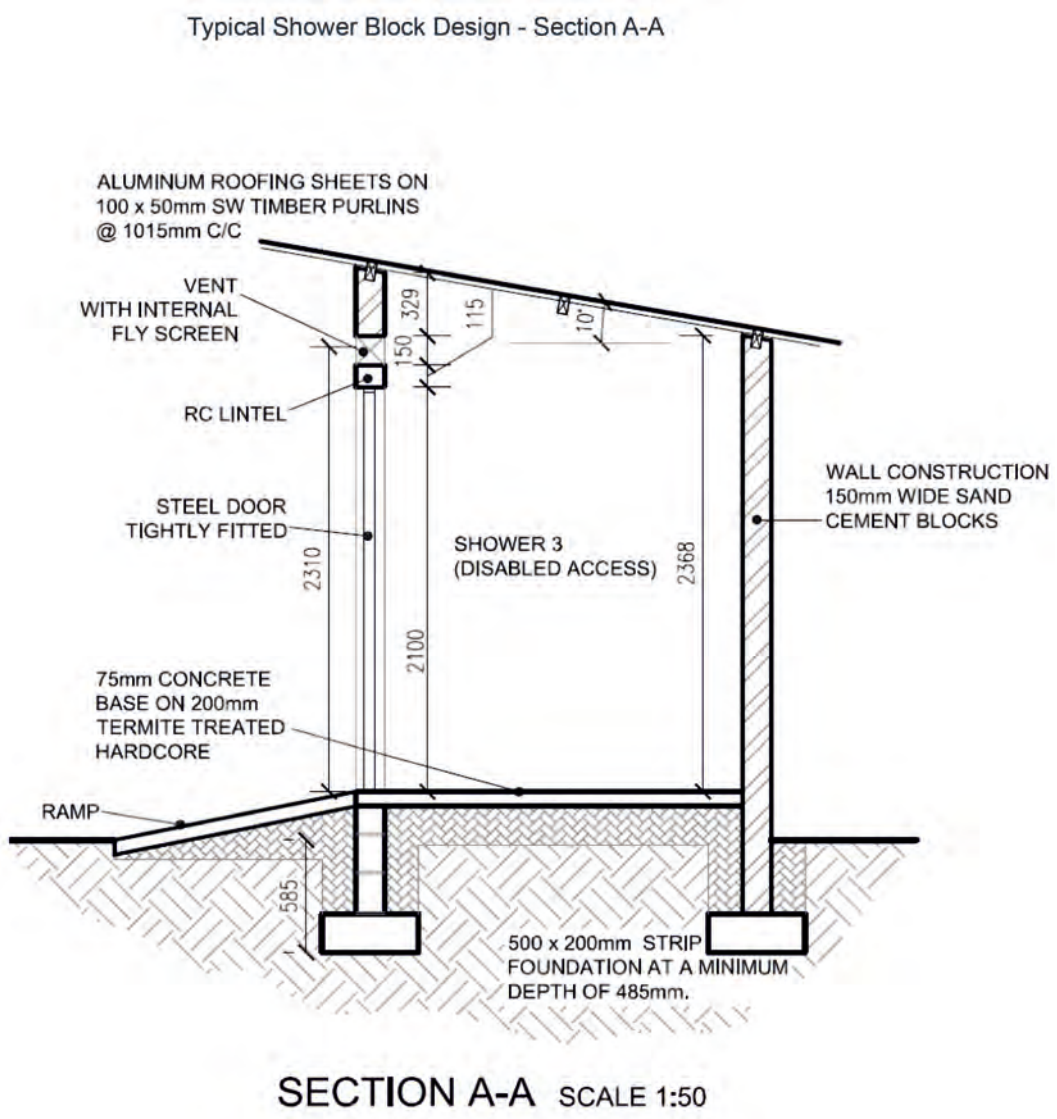
Typical Shower Block Design - Plan



Typical Shower Block Design - Front and Side Elevations

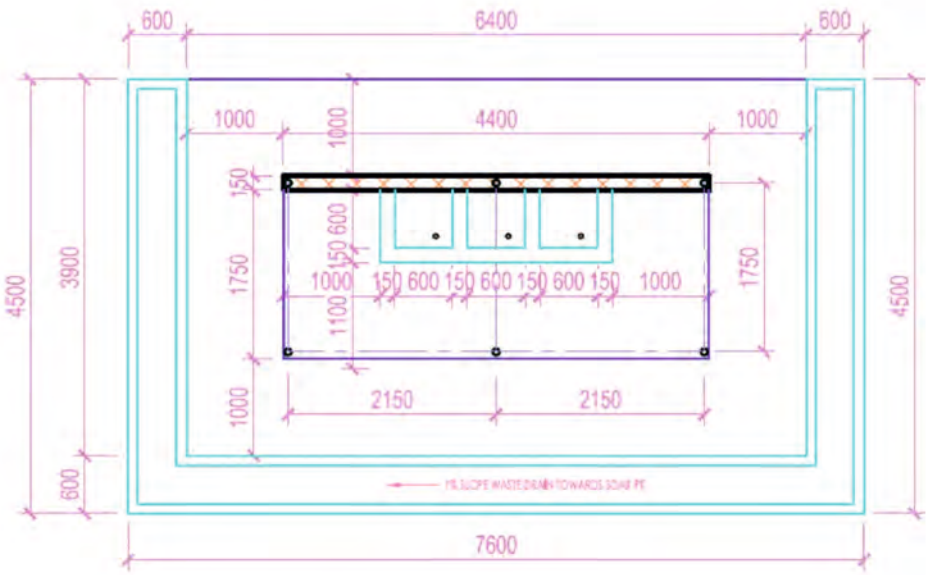


Annex 6.1: Shower block design in section view



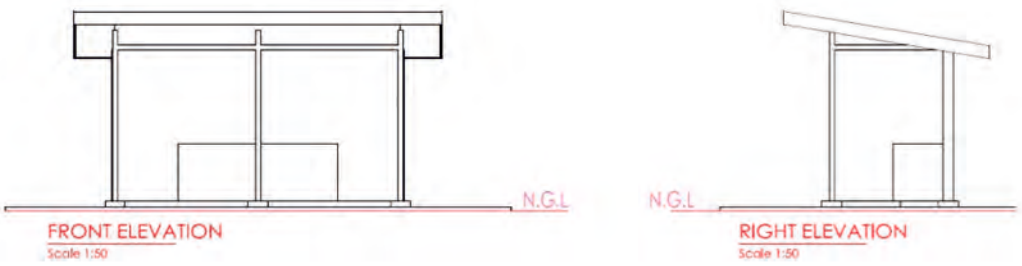
Annex 7: A typical design of a separate laundry-facility

Typical Laundry facility Design - Floor Plan



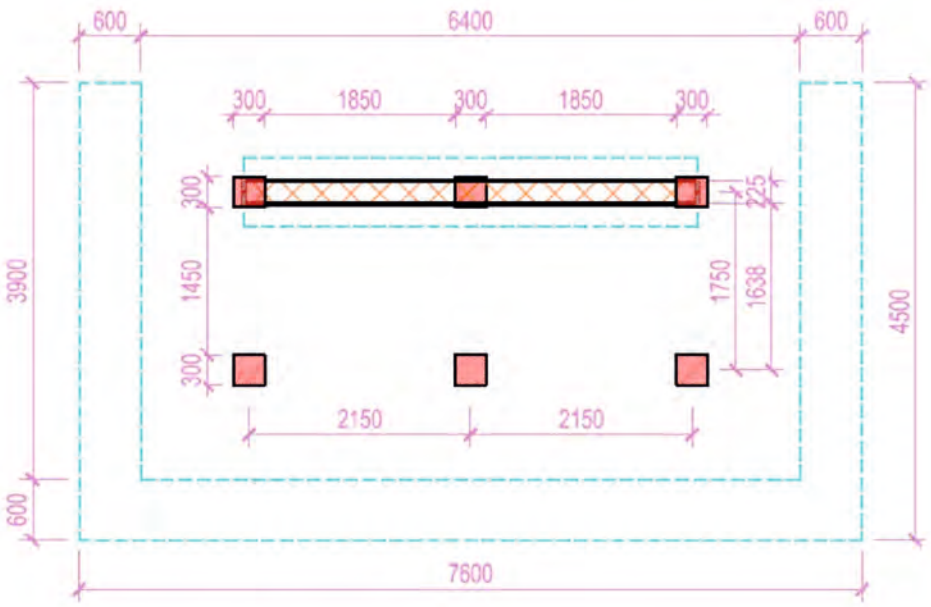
FLOOR PLAN
Scale 1:75

Typical Laundry facility Design - Front & Right Elevation



Annex 7.1: A typical design of a separate laundry-facility – foundation plan

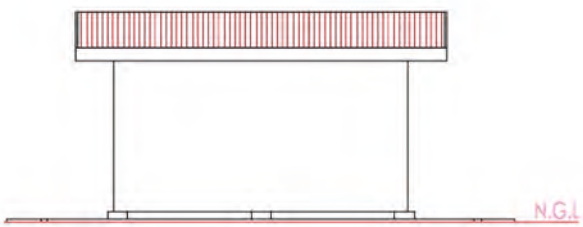
Typical Laundry facility Design - Foundation Plan



FOUNDATION PLAN

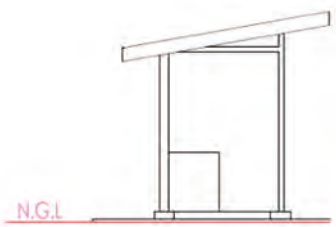
Scale 1:75

Typical Laundry facility Design - Left & Rear Elevation



REAR ELEVATION

Scale 1:50



LEFT ELEVATION

Scale 1:50

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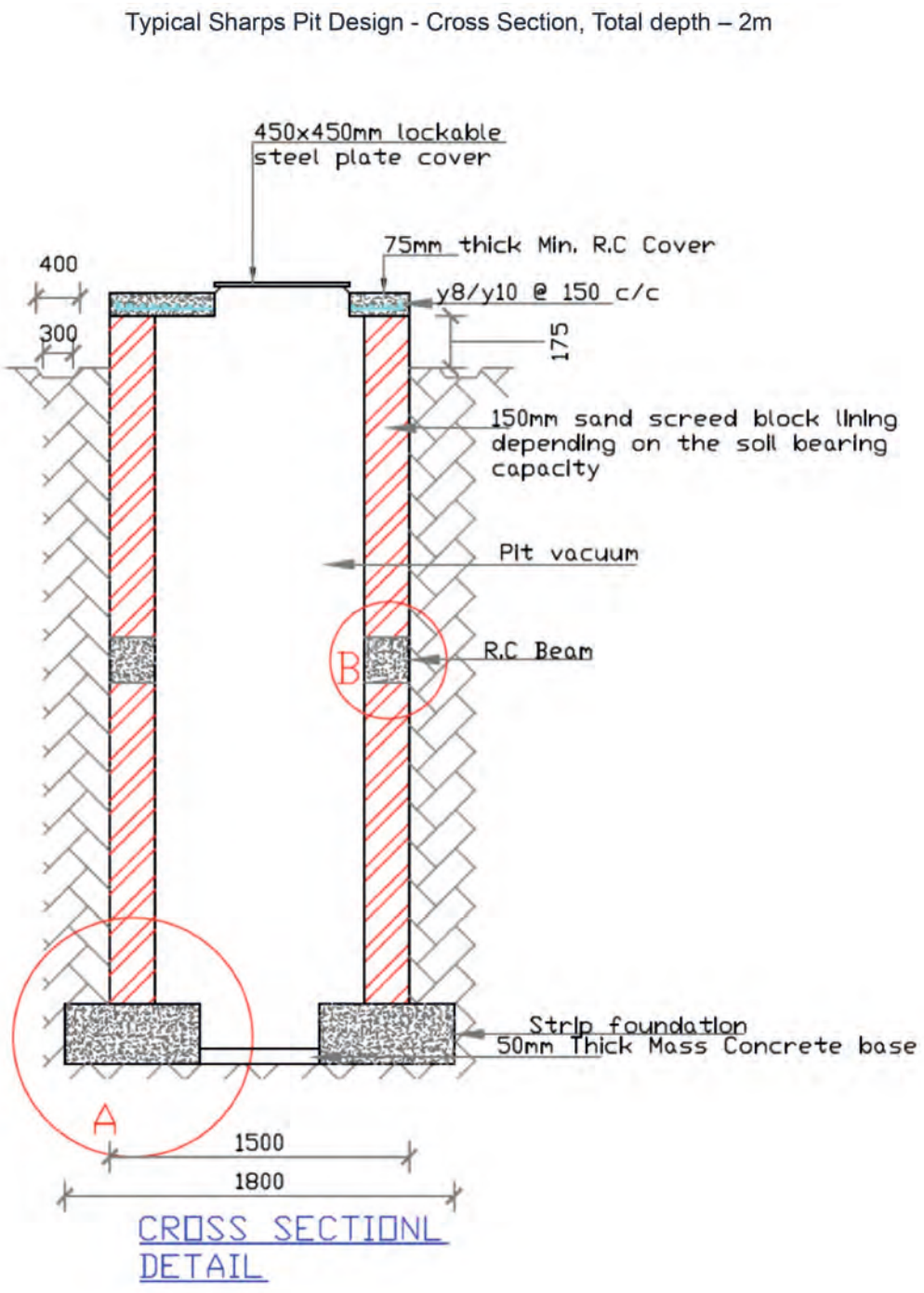
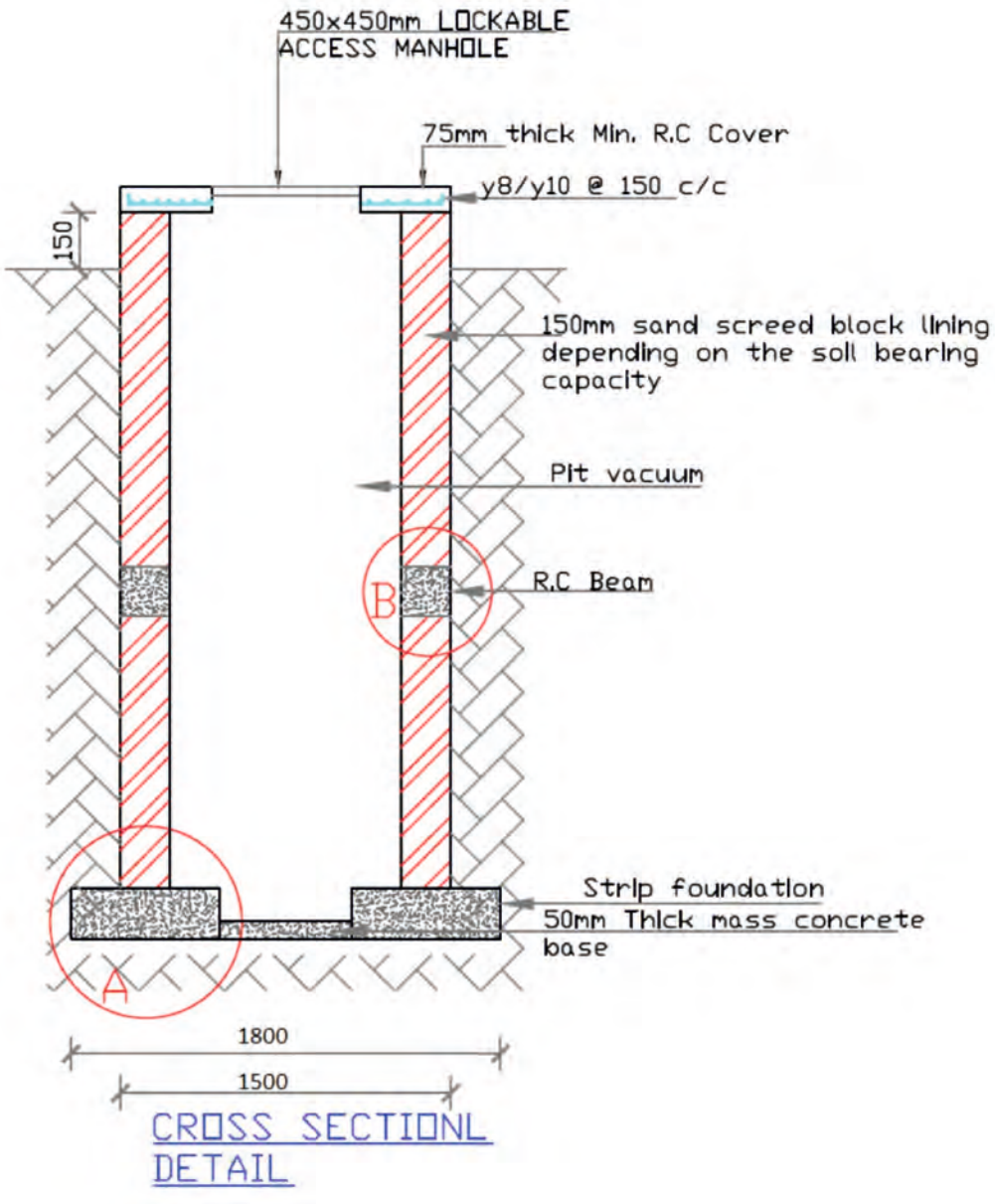
Annex 8: Colouring and segregation of health-care waste (Source: WHO)

Annex 9: A typical design for a placenta pit



Annex 10: Typical ash-pit design

Typical Ash Pit Design - Cross Section, Total Depth – 2m.



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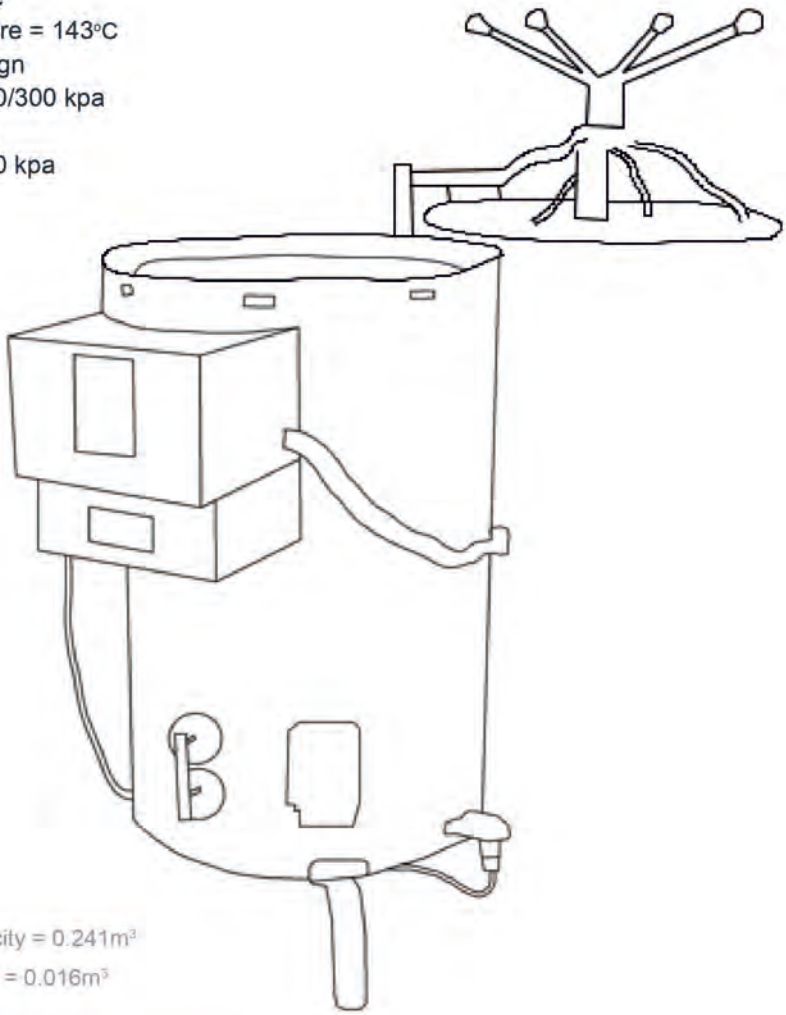
Annex 11: Schematic drawing of cyclic autoclave device

Cyclic Autoclave Unit for Healthcare Waste Management

Design Temperature = 0°C
Maximum Safe
Design Pressure = 143°C
Chamber Design
Pressure = 100/300 kpa
Jacket Design
Pressure = 360 kpa



Notes:

Chamber Capacity = 0.241m³

Jacket Capacity = 0.016m³

Minimum Safe

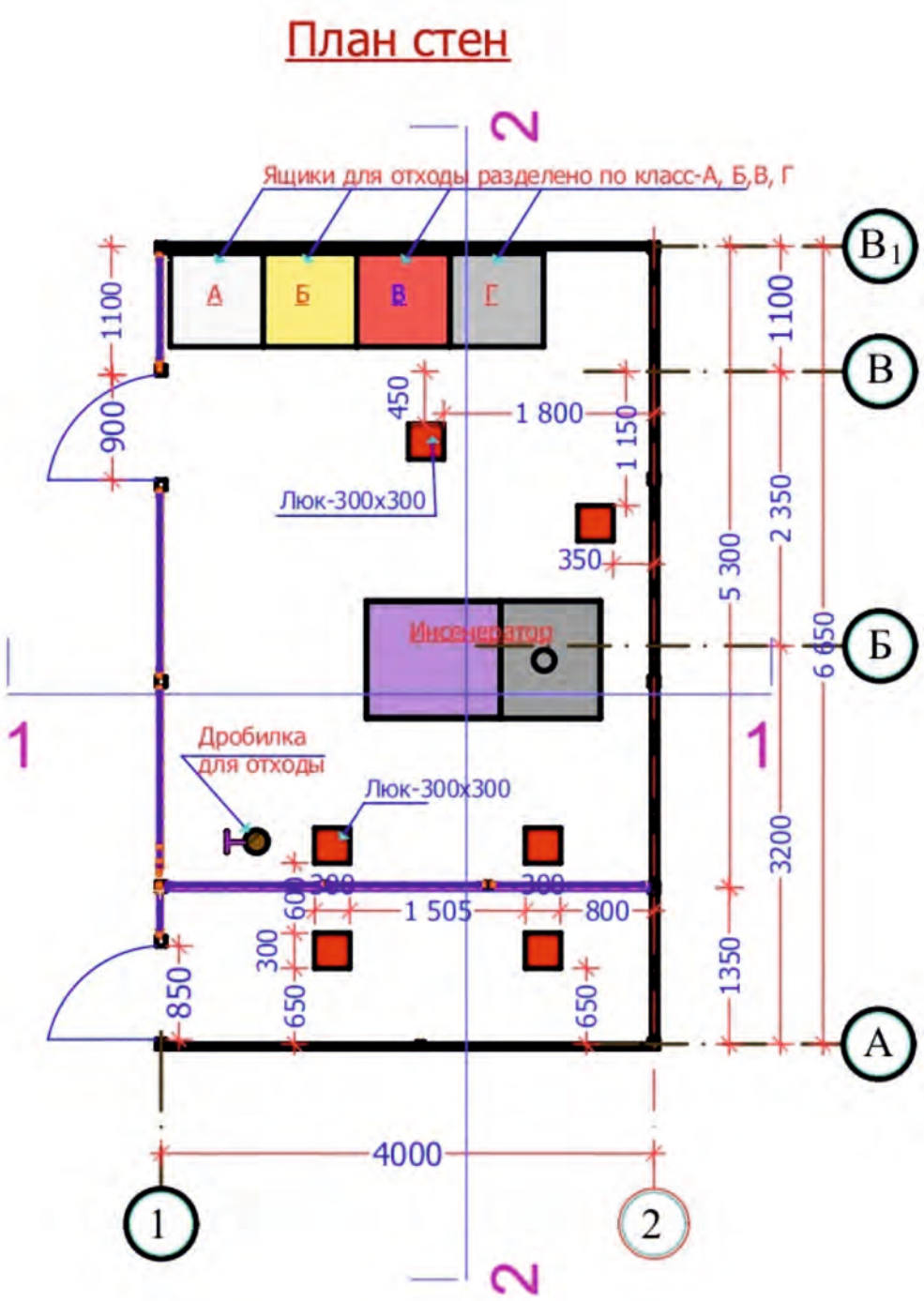
Design Temperature = 0°C Maximum safe
Design Pressure = 143°C Chamber Design

Pressure = 100/300 kpa

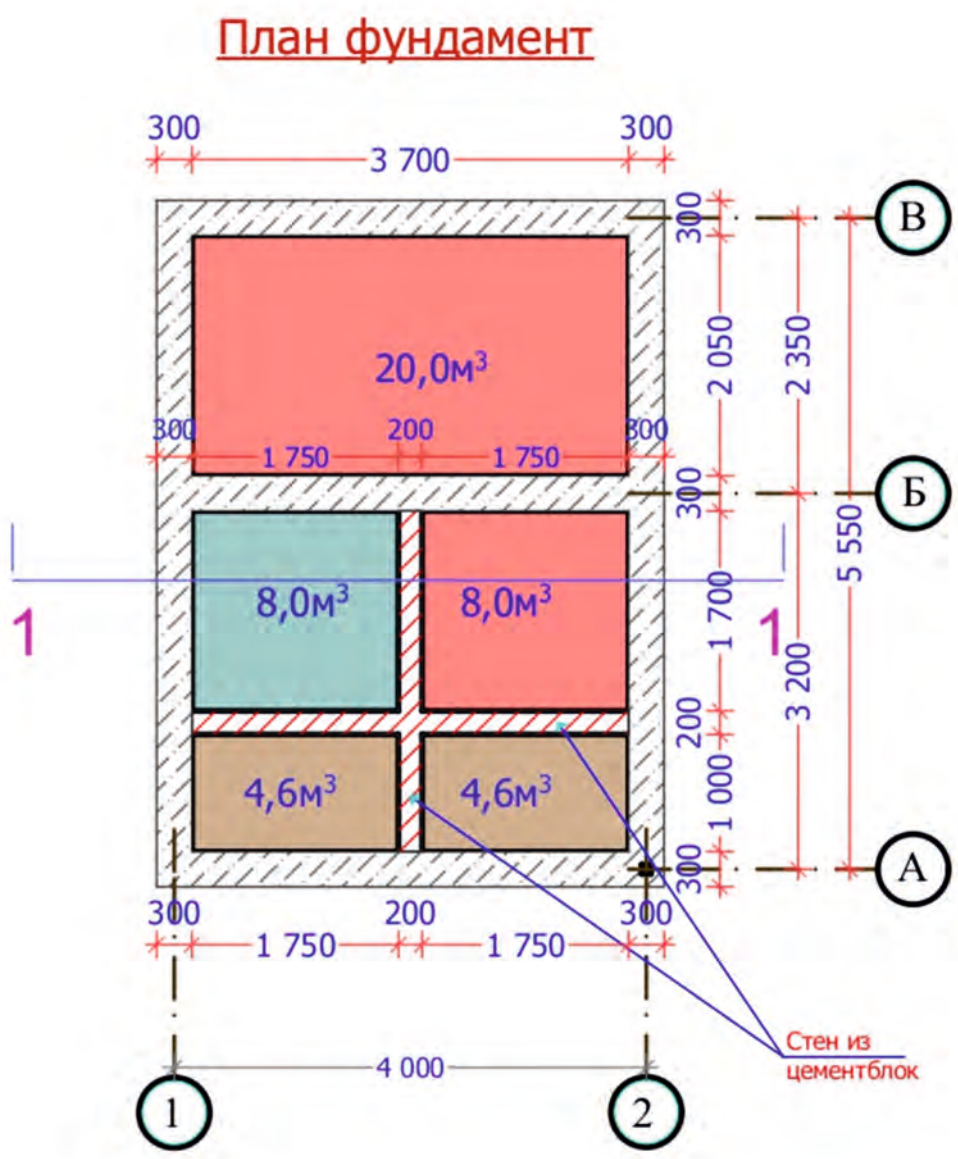
Jacket Design

Pressure = 360 kpa

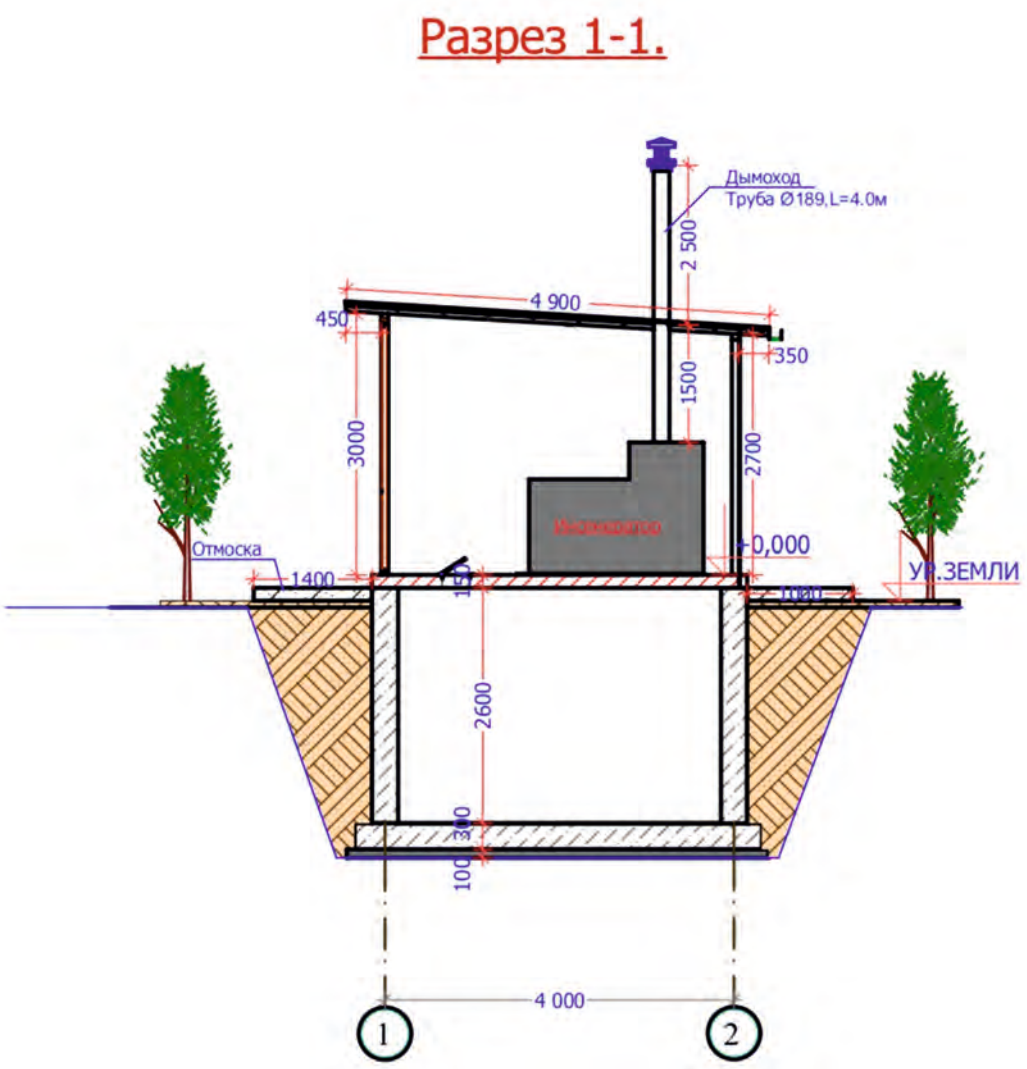
Annex 12: A typical block of a HCWM facility – Plan view 1



Annex 12.1: A typical block of a HCWM facility – Plan view 2



Annex 12.2: A typical block of a HCWM facility – Section view 1



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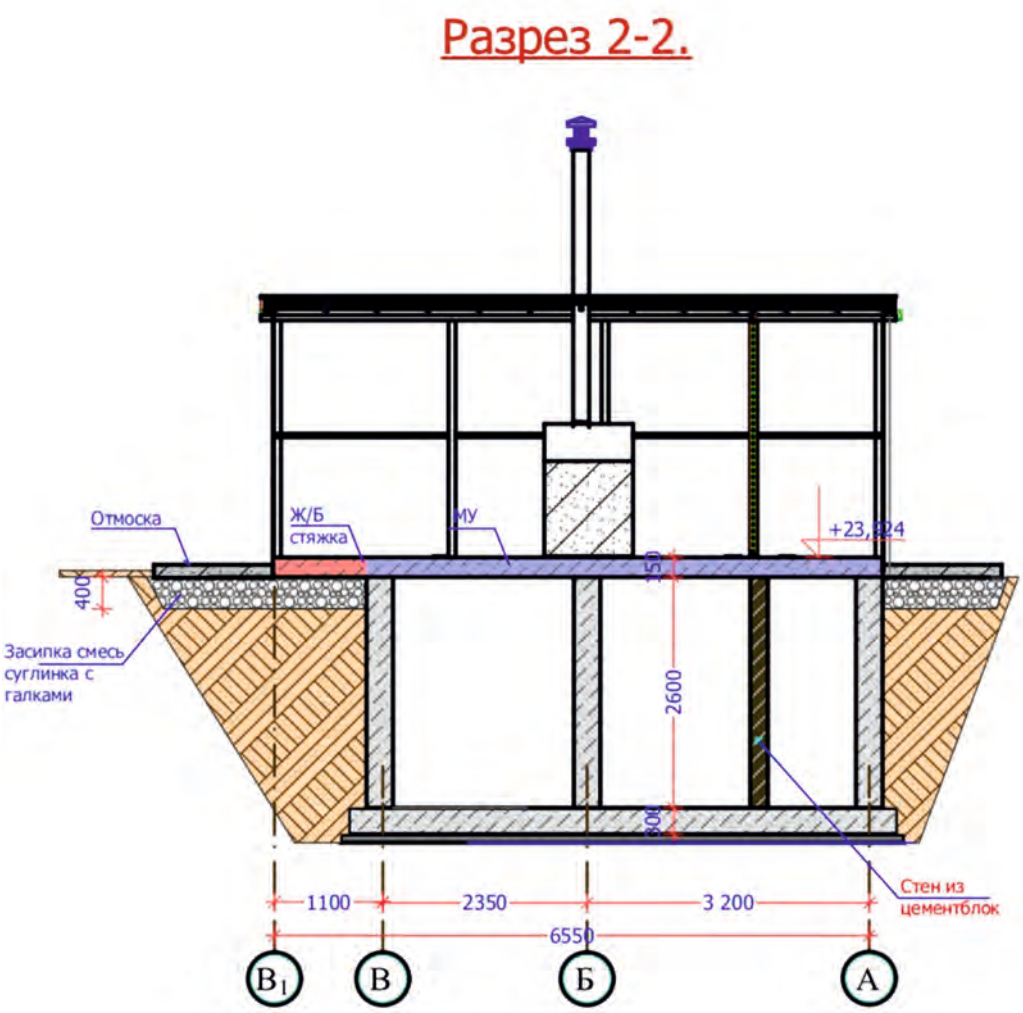
Annex 12.2: A typical block of a HCWM facility – Section view 2



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Annex 12.3: A typical block of a HCWM facility – Side view