COMMUNITY-LED ACCELERATED WASH (COWASH)



GENERIC INSTITUTIONAL WASH IMPLEMENTATION MANUAL IN COWASH IV USING WOREDA MANAGED PROJECTS (WMP) APPROACH

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ACRONYMS

Acronym	Description
BoF	Bureau of Finance
CBE	Commercial Bank of Ethiopia
CMP	Community Managed Projects
COWASH	Community-Led Accelerated WaSH in Ethiopia
GoE	Government of Ethiopia
GoF	Government of Finland
KWT	Kebele WaSH Team
MoE	Ministry of Education
MoH	Ministry of Health
RSU	Regional Support Unit
PTAs	Parents Teachers' Association
RWSC	Regional WaSH Steering Committee
RWTT	Regional WaSH Technical Team
SNNPRS	Southern Nations and Nationalities People's Regional State
UAP	Universal Access Plan
VIPL	Ventilated Improved Pit latrine
WASHCO	Water, Sanitation and Hygiene Committee
WaSH	Water, Sanitation and Hygiene
WAT	Woreda Appraisal Team
WoF	Woreda Office of Finance
WIF	WaSH Implementation Framework
WoE	Woreda Office of Education
W oH	Woreda Office of Health
WoW	Woreda Office of Water
WMP	Woreda Managed Projects
WWT	Woreda WaSH Team

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- Annex 5.1. WASH Facilities in Schools Design and Construction Manual prepared by Ministry of Education (MoE), November 2019. (429 pages).
- Annex 5.2. Health Centre and Health Post Water Supply, Sanitation and Hygiene Facilities Design and Implementation Manual, June 2012.

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1 INTRODUCTION

1.1 BACKGROUND

The Community Managed Projects (CMP) approach as one of the rural WASH implementations approaches in the WASH Implementation Framework (WIF) has been in use in COWASH project since 2011 in three phrases. The third phase of the project which had been implemented from August 2016 to end of March 2021 in 76 woredas located in 5 regions. In the past three phases of COWASH, in addition to the implementation of community water supplies CMP approach was also in use in the implementation of institutional WASH facilities (water supply & latrines) for schools and health institutions.

Since April 2021, the fourth phase of the project which is going to be implemented until end of December 2024 has been started. The phase is to be implemented in 107 woredas located in 6 regions (Amhara, Benishangul Gumuz, Oromia, SNNP, Sidama and Tigray).

The overall objective of phase IV is to contribute to achieving Ethiopia's Ten Years Development Plan (2021 – 2030) which targets for the WASH sectors in terms of water, sanitation and hygiene access coverage and quality of service delivery in selected rural areas by using CMP approach.

The outcomes of the project include increased community and institutional water supply coverage, increased community and institutional sanitation and hygiene coverage and usage, increased functionality and sustainability of built WASH facilities through improved service delivery and women's empowerment and leadership through WASH related activities.

There are different changes made in phase IV as compared to the past three phases. Of which the change made in the use of the CMP approach is that unlike the last three phases where institutional WASH was implemented using the CMP approach, in the fourth phase only community water schemes are to fully follow the CMP approach. But institutional WASH (water supply and sanitation facilities) for schools and health institutions are to be implemented using the **Woreda Managed Project (WMP)** approach. Although the institutional WASH implementation does not follow the full CMP approach which includes the financial and procurement management by WASHCOs, it is recommended that preparatory activities of the CMP approach such as promotion, application preparation & submission, appraisal and project approval by the Woreda WASH Team (WWT) are to be followed also in the institutional WASH implementation as they are important cycles contributing to the sustainability of the institutional WASH facilities. So, this is a manual which details the use of the Woreda Managed Project (WMP) approach in water supply, latrines and menstrual hygiene management (MHM) implementation in schools and health institutions in COWASH IV.

To work towards achieving the objective of the project would have cumulative effect to improve the quality of lives of the rural population and students residing in small towns and this requires having a workable WMP guideline for planning, implementation, monitoring & evaluation of projects. Hence, the focus of this guideline is to present the major principles, procedures and formats to be used for the promotion, application preparation, appraisal, approval, implementation and management of the Woreda Manged Projects (WMP) approach for institutional water supply schemes and latrines implementation.

1.2 OBJECTIVE OF THE MANUAL

In order to have a healthier community at schools and health institutions, the need for having improved WASH facilities (water supply and latrines) is a must. Hence, this implementation manual will give guidance for the implementing bodies and those government sector offices staff assisting institutions in the planning, application preparation, appraisal, construction and post implementation management procedures of institutional WASH (water supply and latrine packages) for schools and health institutions.

There are school sanitation and health institutions sanitation designs prepared by consultants at a national level under the leadership of the national WASH coordination office and distributed to regions for use. Hence, the objective of this manual is not to replace the designs for institutional sanitation but to put procedures/guidance how these designs can be implemented using the Woreda Manged Projects (WMP) approach in COWASH IV woredas.

1.3 KEY ISSUES AND ADDENDUMS TO THE MANUAL

As an implementation manual for institutional sanitation, the two key issues which are given more focus in this manual are: -

- Institutional WASH implementation procedures using WMP approach.
- Highlights on sanitation facility packages & designs for schools and health institutions.

However, the manual alone is not enough for the planning, implementation (procurement, contracting, and supervision) and post construction management of the institutional latrines. This implementation manual gives more focus on issues and formats very specific to the use of the WMP approach in institutional WASH implementation.

More addendums to this manual include government of Ethiopia procurement guideline, standard tender documents and construction contracting forms, school and health institution WASH designs and construction manuals prepared by Ministry of Education (MoE) and Ministry of Health (MoH). These are required to be referred and used in cases when construction management & CMP related issues which are not stated in this manual are encountered.

1.4 INSTITUTIONAL WASH IMPLEMENTATION AS AN OUTCOME IN COWASH IV

One of the outcomes of COWASH IV is **Outcome** 3 which delas with institutional WASH as follows.

Outcome 3: Improved Institutional WASH by Narrowing the Gap in Improved Institutional Latrine, Climate Resilient and Safe Water Supply, and Mensural Hygiene Management (MHM).

In the outcome there are 7 outputs which are highlighted as follows: -

- Output 3.1: Rural Schools, with Improved Latrines, provided with Innovative, Climate Resilient and Inclusive Safely Managed Water Services and MHM with Handwashing with Water Storage.
- Output 3.2: Rural schools, with safe water supply, provided with safely managed latrines with handwashing with water storage and MHM as per the design from COWASH IV.

- Output 3.3: Rural Health Institutions, with Improved Latrines, provided with Innovative, Climate Resilient and Inclusive Safely managed Water Services with Handwashing and Water Storage from COWASH IV.
- Output 3.4: Rural Health Institutions, with Safe Water Supply, provided with Safely Managed Latrines with Handwashing Facility with Water Storage as per the Design from COWASH IV.
- Output 3.5: Schools provided with Full WASH Service Package (water supply, latrine and MHM) with the Support of COWASH IV.
- Output 3.6: Health Facilities provided with Full WASH Service Package (water supply and latrine) with the Support of COWASH IV.
- Output 3.7: Improved Functionality and Management of Rural Institutional WASH through Different Interventions (treatment, monitoring, WSP, availability of spare part supply, private sector, WASH clubs, PTAs & Health Committees) in Project Woredas

In order to contribute to the output implementation of water supply schemes, latrines and menstrual hygiene management (MHM) the WMP approach is to be used in implementation.

The major principles in the implementation of institutional WASH using the WMP approach in COWASH IV: -

- **Approaches for sustainability of WASH facilities:** Although institutional WASH implementation in COWASH IV does not follow the full CMP approach, some of the cycles in the CMP approach which have contributions in ensuring the sustainability of WASH facilities such as application/demand expression by the institutions committee, project appraisal by woreda experts, approval of the project application by WWT, monitoring the implementation of the facilities, and operation & maintenance management of the facilities by the institutions committees will be followed in the WMP approach for institutional WASH implementation.
- **Sources of fund:**
    - The sources of funding for new or rehabilitation of water supply schemes constructions to institutions where there is functional latrine, but no functional water scheme is from the Government of Finland (GoF). This GoF fund to be used for this purpose accounts only **15%** of the total GoF share of each region allocated for the phase. The outputs financed from GoF source are **Output 3.1** and **3.3** of the COWASH IV planning template.

Table 1. Maximum Amount of GoF fund in Euro in each region to be used for institutional water supply construction

It. No.	Region	Total GoF fund for the phase	GoF fund to be used for institutional water supply construction (15% from total GoF)
1	Amhara	2,787,293	418,094
2	Benishangul Gumuz	903,554	135,533
3	Oromia	4,226,440	633,966
4	SNNP	2,361,112	354,167
5	Sidama	1,161,078	174,162
6	Tigray	1,494,523	224,178

The institutions to be served with this source of fund are those institutions with standard latrines but could not be served with water supply due to the need for more complex/high technologies. And the types of water supply technologies given priority to be financed with the GoF fund source are shallow well drilling with hand or solar pump, rural piped schemes from gravity or motorized springs, rural piped schemes for deep well drillings with motorized or solar pumping, roof water harvesting, pipeline connection from existing nearby pipeline and internal water distribution system to different water consumption points such as toilets, MHM rooms, clinic rooms etc. Hand dug well and on spot spring construction are not given priority in this source of fund.

A pre-condition for institutions to be selected for GoF funding is a reliable O&M management and financing plans plus secured O&M budget for at least two years after the commissioning of the scheme. Additional pre-condition specially for institutions where internal water distribution system is required, is a realistic consumption management plan to avoid careless/excessive water use, especially water is paid according to metered use.

- The sources of funding for new or rehabilitation of water supply schemes constructions to institutions where there is functional latrine but no functional water scheme can also be from the Government of Ethiopia (GoE). The outputs financed from GoF source are **Output 3.1** and **3.3** of the COWASH IV planning template.

- The sources of funding for institutional latrines and MHM for institutions having functional water supply schemes is from the Government of Ethiopia (GoE). The outputs financed from GoF source are **Output 3.2** and **3.4** of the COWASH IV planning template.

- The sources of funding for **"full package WASH facilities"** construction to institutions (water supply, latrine and MHM) to institutions without functional water supply, institutional latrines and MHM is from the Government of Ethiopia (GoE). The outputs financed from GoF source are **Output 3.5** and **3.6** of the COWASH IV planning template.

- **Fund Transfer:** The fund for the physical construction of WASH facilities (water supply. latrines and MHM) are transferred directly to the woreda finance office from the region via Commercial Bank of Ethiopia (CBE). As the sources of fund are both from GoF and GoE, the fund transfer is detailed as follows. In case of the sourcing from GoE the investment fund flows directly from Bureau of Finance (BoF) to Woreda Office of Finance (WoF), and in case of the sourcing from GoF the fund first flows from Ministry of Finance (MoF) to BoF and from BoF to WoF.

- **Contract** and **Financial/Fund Management:** The fund for the implementation of institutional WASH facilities is manged by the woreda finance office (WoF). The contract administration/management of the institutional water supply implementation is handled by the woreda water office (WoW), the contract management for the school sanitation facilities is handled by the woreda office of education (WoE), and the contract management for health institutions sanitation implementation is handled by the woreda office of health (WoH).

- **Procurement procedure:** The procurement (for goods and services) in the implementation of the institutional WASH facilities follows the Ethiopian Federal Government Procurement and Property Administration Proclamation no 649/2009 and the Federal Government Public Procurement Directive issued by the Ministry of Finance and Economic Development (MoFED) in June 2010 which each region adapted to its specific condition.

2 COMPONENETS OF INSTITUTIONALWASH FACILITIES IN COWASH IV

The institutional WASH facilities to be implemented in COWASH IV are for those schools and health institutions located in the rural areas of the project woredas. The types of WASH facilities to be implemented in each institution (schools or health facilities) are detailed in this part of the manual.

2.1 SCHOOL WASH FACILITIES IN COWASH IV

The very recent guiding manual for school WaSH implementation in Ethiopia is **"Water Supply Sanitation and Hygiene (WASH) Facilities in Schools Design and Construction Manual, November 2019"** prepared by the Ministry of Education (MoE). The manual was initially prepared by the consulting company Getachew Alem and Associates in June 2012

The manual by MoE includes different school water supply, latrines, and Menstrual Hygiene Management (MHM) design options to be applied from per-schools to high schools.

The manual gives different options of latrines in terms of latrine types, it classifies latrines as dry pit latrines and piped water (flushing) latrines. In terms of the soil formation where the latrines are to be constructed it classifies latrines as those to be constructed in normal soil, in rocky areas or in swampy areas. In further classifies latrines as those to be constructed in pastoral areas (Somali and Afar) and non-pastoral areas.

But for the case of COWASH IV where WASH facilities are to be implemented in schools located in rural areas Ventilated Improved Pit (VIP) latrines is recommended over the flushing type because VIP latrines are relatively simple to build and maintain. Their operation and cleaning require relatively little water; certainly, they do not depend on a regular water supply. The design can be adapted for different circumstances and the resulting latrine can be relatively

low cost. In the case of a rocky formations (where difficult to dig to the required latrine depth) or collapsing soil (where foundation footing is required) other options can be used.

The manual gives also different design options for students in pre-school, and elementary to high school.

In terms of number of seats and blocks of latrines, the manual recommended different number of seats for female and male students depending on of the estimated number of female and mela students in the schools. In rems of number of seats of latrines, it as from 3, 4, 6, 8 and 10 seats for one sex with the assumption that in rural schools for girls one latrine pit serves 50 girl students and one latrine pit serve 75 boy students.

For COWASH case like in the three phases unless there are justifications that other design options put in the manual are required to be implemented, in COWASH woredas ventilated pit (VIP) latrines having three blocks (one 4 seat latrine block for girls, one 4 seat latrine block for boys and 3 seats latrine block for teaches) in normal soil condition prepared for non-pastoral areas is recommended to be followed.

So, in case where there is a need to have more information and latrine design options, the **"**Water Supply Sanitation and Hygiene (WASH) Facilities in Schools Design and Construction Manual, November 2019" can be referred further.

Recommended school sanitation packages in COWASH IV

From the different school latrine options recommended in the manual by MoE, the following are proposed to be constructed as school sanitation package in COWASH IV rural schools and are included in this implementation manual.

a) For teachers/staffs (plans & sections of the design shown in Annex 1.1):

- Hollow concrete block (HCB) made for three seats latrine.
- Hand washing facility.

b) For boy students (plans & sections of the design shown in Annex 1.2):

- Hollow concrete block (HCB) made for four seats latrine.
- Urinal (urination facility).
- Hand washing facility

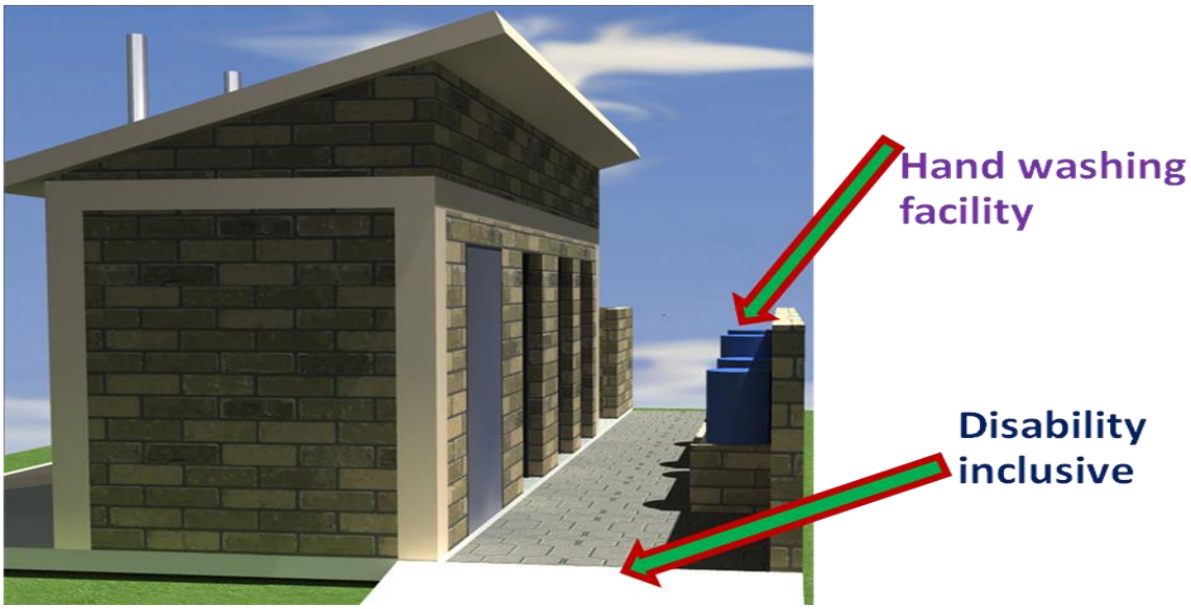


Figure 2.1 Four seat latrine for boys

c) For girl students (plans & sections of the design shown in Annex 1.3 to 1.4):

- Hollow concrete block (HCB) made for four seats latrine.
- Urinal (urination facility).
- Hand washing facility.
- Menstrual hygiene management rooms

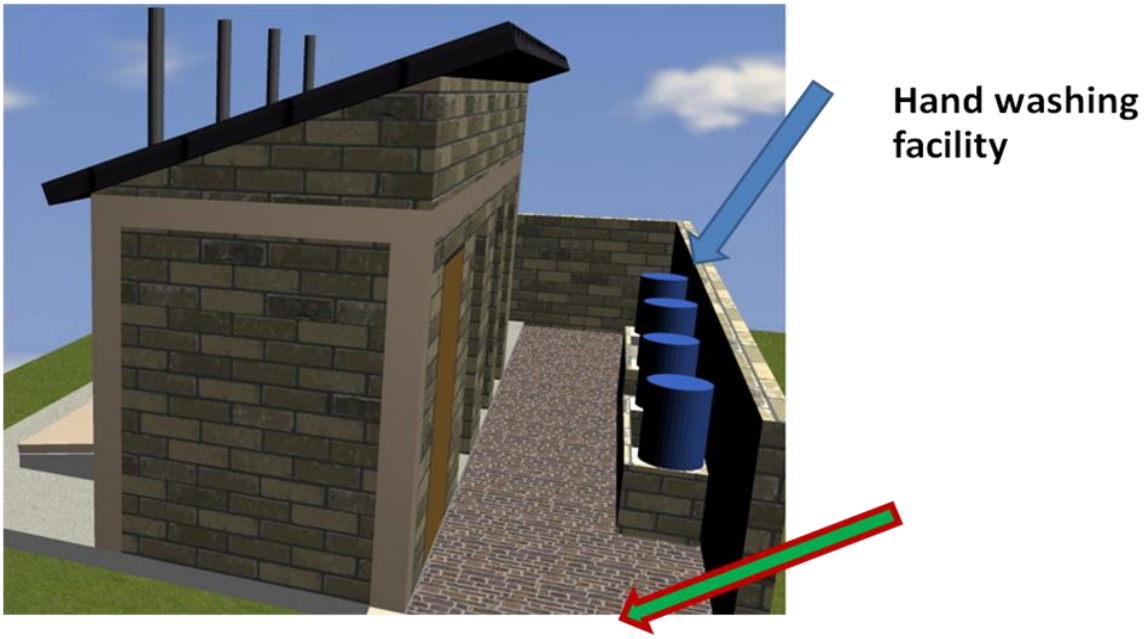


Figure 2.2 Four seat latrine for girls



Figure 2.3. Urinals for boys

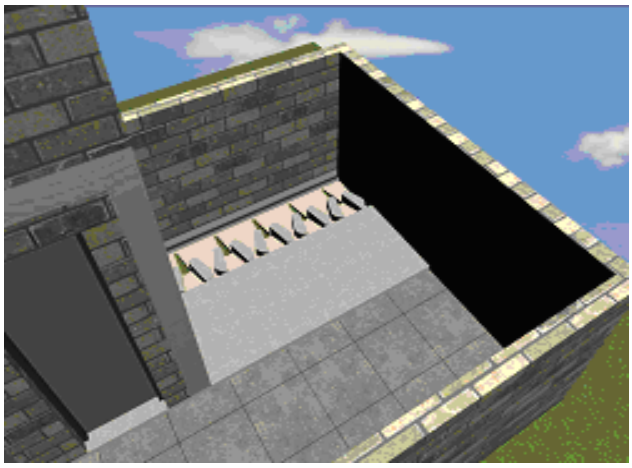


Figure 2.4. Urinals for girls

Water supply technologies recommended to be constructed for schools are: -

The type of water supply technologies to be implemented in schools depending on the availability of the source. The following are the water supply technologies recommended to be implemented in COWASH IV schools where they are feasible.

- New hand dug well (HDW) with hand pump with Handwash facility
- New on Spot spring development (SPD) with Handwash facility
- New spring development (SPD) with collection chamber (CC) with Handwash facility
- New Shallow Wells with hand pump installation with Handwash facility
- New Rural Piped scheme (RPS) from gravity spring with Handwash facility
- New Deep wells drilling
- New Rural piped scheme (RPS) from deep well source with Handwash facility
- New Rural Piped scheme (RPS) from Motorized Spring with Handwash facility
- New Roof Water Harvesting (RWH)
- New shallow well or deep well drilling fitted with solar pump where feasible
- Expansions from existing water system with handwash facility
- Rehabilitation of hand dug wells (HDW) with hand pump & construct handwash facility
- Rehabilitation of on Spot springs (SPD) and construct handwash facility
- Rehabilitation of SPD with collection chamber (CC) & construct handwash facility
- Rehabilitation of Shallow Well with hand pump installation & construct handwash facility
- Rehabilitation of Rural Piped scheme (RPS) from gravity spring and construct handwash facility
- Rehabilitation of Rural piped scheme (RPS) from deep well source & construct handwash facility
- Rehabilitation of Rural Piped scheme (RPS) from Motorized Spring & construct handwash facility

2.2 HEALTH INSTITUTION WASH FACILITIES IN COWASH IV

Health Centre and Health Post refers to those institutions in charge of improving the health and sanitation situation of the communities. They also provide education and consultation on hygienic practices and support on the methods of improving the sanitation condition of the community.

Health centre and health post sanitation is part of the major areas of the health services for patients and as demonstration centres to communities. The aim of health centres and health posts in providing sanitation facilities is to improve existing sanitation conditions at the institutions.

According to the health service delivery arrangement indicated in HSDP IV, primary health care unit comprises of a health centre and five satellite health posts, which altogether provide services to 25,000 people. Health posts are the frontline health care providers and health centres are the next higher level health care providers, which serve as a referral centre for health posts.

The recent guiding manual for health institutions' WaSH is, a manual entitled **"Health Centre and Health Post Water Supply, Sanitation and hygiene facilities design and implementation manual"** prepared by Metaferia consulting engineers in June 2012 and financed by the three Ministries (Ministry of Health, Ministry of Education, and Ministry of Water & Energy) in collaboration with Water-Aid Ethiopia.

In this manual, the appropriate technology options for the construction of water supply, sanitation and hygiene facilities that can be used by the health institutions, namely health centre and health posts are described**.**

As stated in the manual, from the different sanitation technology systems available, VIP latrines, which is one of the dry sanitation systems is only the most recommended system for health centres and health posts.

Recommended health institutions sanitation packages in COWASH IV

The sanitation facilities included in health institution WaSH manual and to be handled in this implementation manual are:

1) For health posts

a) **For females** and **males** (plans & sections of the design shown in Annex 2.1):
   - One block Hollow concrete block (HCB) made two seats latrine.
   - Hand washing facility

b) Incinerator **(only when needed)** (Annex 2.2).

c) Placenta pit **(only when needed)** (Annex 2.4).



Figure 2.5. 2/two/ seats helath post latrine

2) For health centres

a) **For females** and **males** (plans & sections of the design shown in Annex 2.2):

- One block Hollow concrete block (HCB) made five seats latrine.
- Hand washing facility

b) Incinerator (Annex 2.3).

c) Placenta pit (Annex 2.4).



Figure 2.6. 5/five/ seats helath center latrine



Figure 2.7. Incinerator for helath center

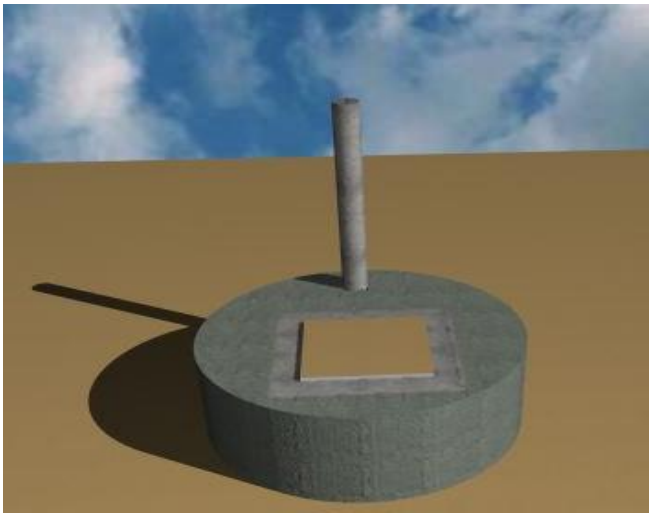


Figure 2.8. Placenta pit for helath center

Water supply technologies recommended to be constructed for health institutions are: -

- New hand dug well (HDW) with hand pump with Handwash facility
- New on Spot spring development (SPD) with Handwash facility
- New spring development (SPD) with collection chamber (CC) & Handwash facility
- New Shallow Wells with hand pump installation with Handwash facility
- New Rural Piped scheme (RPS) from gravity spring with Handwash facility

- New Deep wells drilling
- New Rural piped scheme (RPS) from deep well source with Handwash facility
- New Rural Piped scheme (RPS) from Motorized Spring with Handwash facility
- New Roof Water Harvesting (RWH)
- New shallow well or deep well drilling fitted with solar pump where feasible
- Expansions from existing water system with handwash facility
- Rehabilitation of hand dug wells (HDW) with hand pump & construct handwash facility
- Rehabilitation of on Spot springs (SPD) and construct handwash facility
- Rehabilitation of SPD with collection chamber (CC) & construct handwash facility
- Rehabilitation of Shallow Well with hand pump installation & construct handwash facility
- Rehabilitation of Rural Piped scheme (RPS) from gravity spring & construct handwash facility
- Rehabilitation of Rural piped scheme (RPS) from deep well source & construct handwash facility
- Rehabilitation of Rural Piped scheme (RPS) from Motorized Spring & construct handwash facility.

3 INSTITUTIONAL WASH IMPLEMENTATION USING WMP APPROACH

3.1 KEY ISSUES AND WMP PROJECT PROCSSING CYCLE IN INSTITUTIONAL WASH IMPLEMENTATION

The key issues when implementing WMP approach for institutional WASH in COWASH IV are:

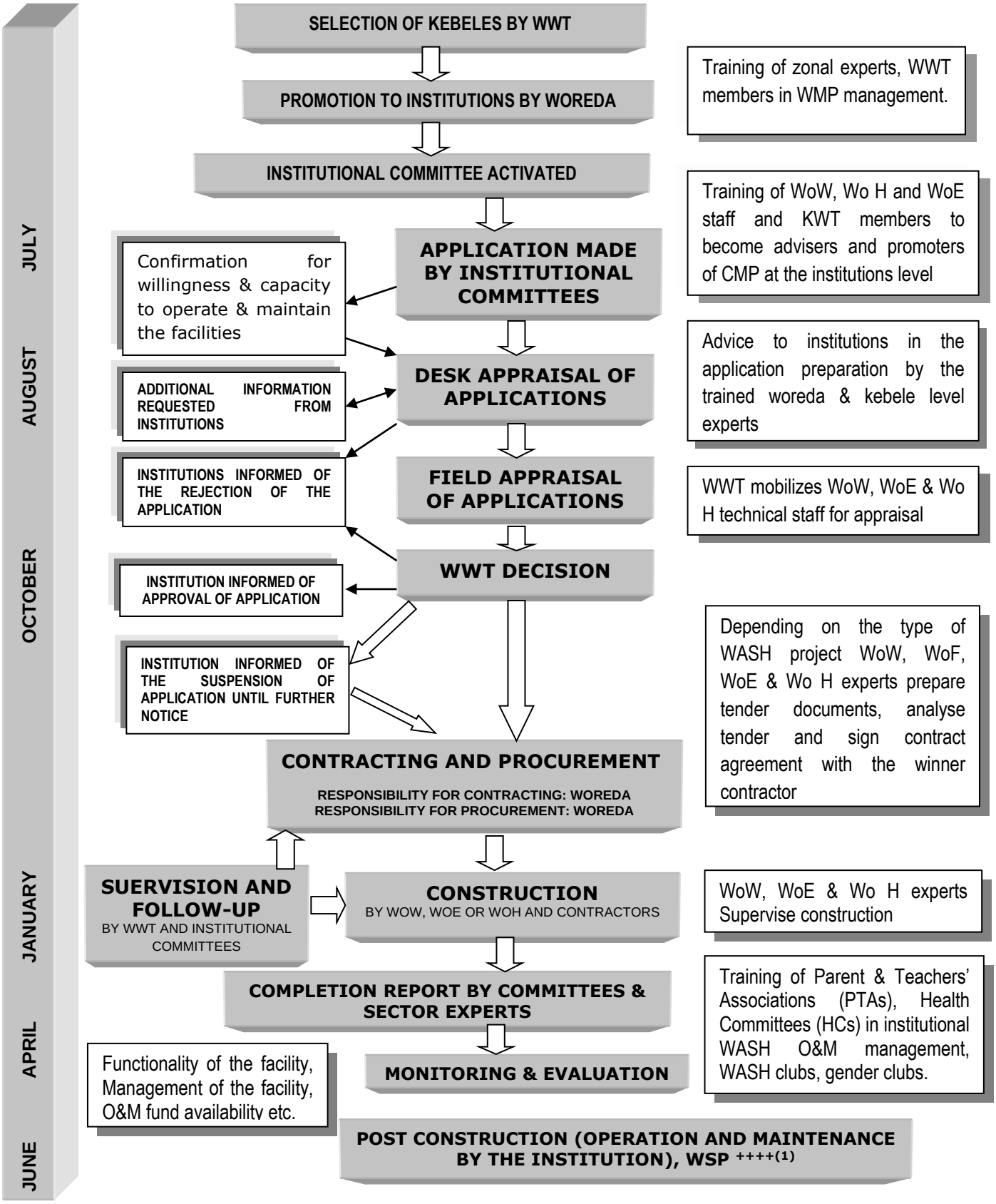
1) Implementation will fully depend on institutions own initiative (application to the WWT).
2) Institutions will receive technical and material support from the Woreda authorities during and after the construction of sanitation facilities.
3) Institutions and the user communities have to demonstrate both their willingness and capacity to cover the operation and maintenance cost for the specific technology.

   The possible criteria which demonstrate the willingness and capacity to operate and maintain the facilities can be: -

   - Guarantee letter from the institution to manage the O&M of the facilities including the possible sources of O&M fund or
   - Certified copy of the institution annual budget clearly showing the allocation for O&M of WaSH facilities.

   NB. Upfront cash contribution for O&M is not mandatory for institutional WASH.
4) Investment fund for physical construction is directly transferred from region to the woreda finance office and administrated by the woreda finance office with a technical support from the woreda water, health or educations offices depending on the type of WASH facility to be implemented.
5) **Community contribution during construction is not a must for institutions.** But in case when needed support in improving access roads and provision of storage service for construction materials and equipment are appreciated.
6) The Parents and Teachers Association (PTAs) members and Health Committees (HCs) are expected to commit themselves to follow the progress of construction, and cover the finance for the operation and maintenance of the WaSH facilities after the construction, but they are entitled to receive technical support from the Woreda sector offices.

Figure. 3.1 THE WOREDA MANAGED PROJECT CYCLE FOR INSTITUTIONAL WASH (Health Facilities and Schools) IMPLEMENTATION



[1] The WSP+++ concept combines Water Safety Plan (WSP) that also addresses climate change adaptation and disaster risk reduction (+), O&M and water fee collection (++), inclusion (+++) and sanitation (++++).

3.2 MANAGEMENT OF THE CMP INSTITUTIONAL INVESTMENT FUND

Once funds for the institutional WASH implementation are in the Finance Bureau, be it from the donors or regional government budget sources, the actual investment fund management operates at two levels: Region and Woreda levels. The management of funds is divided into financial responsibility and operational responsibility. The financial responsibility goes hand in hand with possession of funds at each moment. The following table describes these two sides of fund management responsibilities at two levels:

Table 2: Decision of financial & operational responsibilities in the management of investment funds

Management level	Financial responsibility (Disbursement of money, accounting, fund requests etc.)	Operational responsibility (giving direction and approvals)
Regional level	Finance Bureau/Water Bureau/Health Bureau/Education Bureau	Regional WASH Technical Team (RWTT)
Woreda level	Finance office	Woreda WASH Team (WWT)

Institutional WASHCO and its role

Institutions represented by WASHCOs (Parents & Teachers Associations in schools and Health Committees in health institutions) are those responsible for identifying the type of WASH facilities required to be applied for the construction, follow up of the progress of construction, , ensure budgeting for the O&M fund for the facilities.

Once the WASH facilities are constructed the WASHCOs have to monitor regularly the conditions of the facilities and conduct discussion with the institutional community such as school administrations for schools, advocate locally for improvement in the management of the facilities, and support the maintenance of the facilities.

In the effort the institutional WASHCO is making, the Woreda staff, particularly the Woreda Water, Health and Education Offices staff shall provide guidance and technical support.

3.2.1 Training of WASHCOs in CMP management

In order to implement the CMP approach in the institutions, it is essential to provide training to the WASHCOs in the CMP management and will be done together with WASHCOs for approved water points.

4 CRITERIA OF ELIGIBILITY FOR FUNDING

4.1 ELIGIBILITY OF APPLICANTS (WHICH INSTITUTION MAY APPLY)

The institutions that want to apply for funds from WMP have to fulfil the following criteria:

a) The institution has to be primary school (school up to grade 8), health post or health centres.

b) Application for water supply from an institution which does not have any water supply before will get priority.

c) Applications for sanitation from an institution which does not have any latrine before will get priority. Institution having functional but non-standard latrines will be given the second priority.

d) Applications for water supply and sanitation from an institution which does not have both water supply and sanitation facility.

e) Applications for menstrual hygiene management (MHM) facility for schools which have water supply and latrines but not MHM rooms.

f) The institution which is willing to establish or strengthen the existing WASHCO (Parent & Teachers Associations for schools and Health Committee for health institution) to bear the operational responsibility for the WASH facilities construction, and future operation and maintenance.

g) The institution which is able to prove their commitment (presenting it in the application) how it is going to handle for proper utilization, management and maintenance of the latrine.

h) Kebele support to the project is proven by a support letter from the Kebele administration.

4.2 ELIGIBILITY OF PROJECTS (INSTITUTIONAL SANITATION FACILITIES)

The WASH facilities type recommended to be financed in schools and health institutions implementation manuals are described in sections 2.1 & 2.2 above of this manual. Just to the type of the project to be financed in COWASH IV as one of the eligibility criteria for budget approval by the WWT, the WASH facility packages eligible for financing in COWASH IV are summarized below.

- **For schools**
    - **Water supply:** Construction of new or rehabilitation of existing water supply schemes technologies listed in section 2.1.
    - **Sanitation facilities:** Construction of latrines for boys, girls & teachers, Urinals for boys & girls, and hand washing facility for boys, girls & teachers, and Menstrual Hygiene Management (MHM) rooms for girls.

- **Menstrual hygiene management (MHM) facility:** Construction of MHM facility for schools which have water supply and latrines but not MHM rooms.

- **For health centres**
  - **Water supply:** Construction of new or rehabilitation of existing water supply schemes technologies listed in section 2.2.
  - **Sanitation facilities:** Construction of latrines and hand washing facilities for males & females, placenta pits and incinerator.
- **For health posts,**
  - **Water supply:** Construction of new or rehabilitation of existing water supply schemes technologies listed in section 2.2.
  - **Sanitation facilities:** Construction of latrines and hand washing facilities for males & females, placenta pits and incinerator when needed.

4.3 ELIGIBILITY OF COSTS

In order to be considered eligible in the context of the WMP approach, costs must:-

- Be used for the WASH facilities packages shown in section 2.1 & 2.2 only.
- Be mentioned in the budget estimate annexed to the field appraisal report.
- Be cost-effective and within the acceptable market prices.
- Have been incurred during the duration of the execution/implementation of the project.

5 APPLICATION PREPARATION AND FOLLOW-UP

5.1 APPLICATION FORMAT AND SUPPORTING DOCUMENTS

Application must be submitted to WWT with the format annexed to this manual (Annex F.1 for water schemes applications and Annex F.2 for latrines/sanitation facilities applications). The distribution of the application formats to Kebele WaSH Team is done by the Woreda Office of Water (WoW). Applicants (institutions) will get the formats and assistance for filling the formats from the Kebele WaSH Team and if necessary, also from the WoW, WoH or WoE.

The application format attached to this guideline is in English and should be translated into the working language of the Regional State/Zone concerned by the RSU staff.

The application format should be filled carefully and as clearly as possible in order to facilitate its appraisal. The instructions attached to the application format have been made to applicants' convenience and should be followed. A list of necessary supporting documents required is included in the format.

The kebele WaSH Team members, Woreda Water, Health and Education offices personnel and members of the WWT should commit themselves to being at the applicants' disposal to help in the preparation of the applications. The Kebele WASH Team members will be trained in order to enable them to function as promoters and community level advisors during the application phase.

5.1.1 Institutional Water, Sanitation and Hygiene Committees (WASHCOs)

In health institutions and schools normally, institutional committees exist to handle many of the activities to be performed in the institutions. If these committees are found to be weak due to various reasons, strengthening them to handle some activities during the implementation of the project and also in the operation & maintenance of the WASH facilities is to be given attention.

5.1.2 Cost estimate

Budget estimate shall be prepared as part of the application. In order to prepare this cost estimate Woreda water, health and education offices together have to prepare information on the estimated *average* construction costs of the specific institutional (schools, health centres and health posts) sanitation facilities. This information shall be made available to the Kebele WaSH Team (preferably to the Kebele Manager, Health Extension Workers and Water Extension Worker, if any). The three Woreda WaSH sector offices shall update the average construction costs and provide updated information to the Kebele WaSH Team annually.

The applicants should pay special attention to the budget estimate as it is one of the appraisal criteria and the approval of the project by WWT is to be based on.

5.2 SUBMISSION AND PROCESSING OF APPLICATIONS

5.2.1 Desk Appraisal

General

- Applications for water schemes for both health and educations institutions shall be submitted to the water office preferably the CMP supervisor and the desk appraisal is done by the CMP supervisor or other water office staff who are trained in the appraisal of institutional water schemes applications. The project file for the water point applications is opened and manged at the water office.
- Applications for latrines/sanitation facilities for health institutions shall be submitted to the health office preferably the COWASH focal person at the woreda health office and the desk appraisal is done by the focal person or other health office staff who are trained in the appraisal of institutional latrine/sanitation applications. The project file for the health institutions latrines/sanitation facilities applications is opened and manged at the health.
- Applications for latrines/sanitation facilities for schools shall be submitted to the education office preferably the COWASH focal person at the woreda education office and the desk appraisal is done by the focal person or other education office staff who are trained in the appraisal of institutional latrine/sanitation applications. The project file for the school latrines/sanitation facilities applications is opened and manged at the health.

The applications and should be delivered at the offices (depending on the type of WASH facility to be applied) by hand, to the respective office COWASH focal person preferably on working days. The body to submit the completed applications to the offices can be the institutional WASHCO (PTAs or health committees) or staff/s of the school or health facility. In the presence of the WASHCO members/applicant the following process will take place:

- Application is numbered as follows: Application No. XX /EFY (XXXX).
- Application is registered and the respective "Application follow-up form" (Annex F.3) is opened and it will be attached on top of the project file.
- The CMP Supervisor for water schemes, the health office focal person for health latrines and the education office focal person for school latrines or his/her delegate together will perform ***office level appraisal*** and verify the administrative compliance of the application in the presence of WASHCO members/applicant to guarantee immediate feed-back in case some necessary document is missing. The office level appraisal form is shown in Annex F.4 in this manual).
- The applicant will be issued a receipt concerning the submission of an administratively compliant application/non-compliant application (Annex F.5). In the latter case, the applicant will receive written explanation on reasons leading to non-compliance, e.g. list of missing documents and the applicant will be given instruction on how to complete the application. Timing for re-application may be agreed.
- In case of administratively compliant application, the timing of a ***field appraisal*** will be proposed to the applicant institution representative/WASHCO by the offices focal persons or his/her delegate. As there may be lack of engineers at the health and education offices, it is proposed that one engineer from the water office to be the member of the field appraisal for health or school latrines. So, when the education or health office focal persons are making appointment for the field appraisal with the applicants, it is good they contact/consult the CMP supervisor at the water office before deciding on the date of the filed appraisal. The field appraisal should take place as soon as possible, preferably before the next WWT meeting or within 15 days.

Table 3. Desk Appraisal Criteria for Institutional WASH (water schemes and sanitation facilities) Applications

	Appraisal criteria	**Yes**	**No**
A	**For Water scheme applications only** (for water offices only)		
A.1	Is the requested water point construction/rehabilitation/expansion technology type eligible for financing by the WMP for institutions? (i.e., Hand dug well (HDW), Spring on spot (SPO), Spring with collection chamber (SPCC), Shallow well (SW), Rural piped scheme (RPS)? • If the answer is Yes, is it **New construction**, **Rehabilitation** or **Expansion**? (Circle as appropriate).		
A.2	If yes, is it **HDW, SPO, SPCC, SW, RPS** from gravity spring, **RPS** from motorized spring, **RPS** from deep well with motorized, **RPS** from deep wells with solar power or OTHERS? (Circle as appropriate)		
B	**For Sanitation facilities** and **MHM applications only** (for Education or health offices)		
B.1	• Is the institution type eligible for COWASH IV financing? • If yes, what is the institution type? **R**ural primary school (1 to 8), health post, health centre (**underline as appropriate**)?		
B.2	Are the requested sanitation components for construction those included for financing for the respective institution in COWASH IV?		

	Appraisal criteria	Yes	No
C	**Applicable for both water schemes & sanitation facilities applications** (for use by water, health and education offices)		
C.1	Is the estimated cost of the project realistic/reasonable with the market price in the area?		
C.2	Does the application contain the following annexes?		
	- List of committee members (PTAs for schools & Health Committees for health institutions)		
	- Commitment of the institution to cover future O&M of the facilities.		
	- The seal of the institution submitting the application		
	- Recommendation letter from the Kebele administration		

Table 3. Desk Appraisal Criteria for Institutional WASH (water schemes and sanitation facilities) Applications-Continued

	Appraisal criteria	Yes	No
C.3	Is the application administratively compliant and recommendable for field appraisal?		
C.4	Please indicate reason for temporary disqualification or rejection if not appearing above: _____ _____		
C.5	If the application did not pass the desk appraisal, has the applicant been informed of reasons for disqualifying the application?		
C.6	Date of informing the applicant on the result of desk appraisal: _____		

Place: _____ Date: _____

Name & Signature of the office level appraiser(s) from water office (for water schemes application): _____

Name & Signature of the office appraiser(s) from health/education office (for latrines/sanitation facilities applications): _____

5.2.2 Field Appraisal

General

- Applications for water schemes for both health and educations institutions shall be field appraised by at least 2 water office experts who are trained in the appraisal of institutional water schemes applications. The field appraisal report shall be filed at the project file opened in the water office.
- Applications for latrines/sanitation facilities for health institutions shall be field appraised by the health office focal person and one engineer from the woreda water office as there is shortage of engineer at the health offices. In case when there is shortage of engineer even from water office and if there is a construction office at the woreda, the engineer from the construction office can participate in the field appraisal to see technical issues in the site selection for the construction of the latrines/sanitation facilities. The field appraisal report shall be filed at the project file opened in the health office.
- Applications for latrines/sanitation facilities and MHM (if separately applied) for schools shall be field appraised by the education office focal person and one engineer from the

woreda water office as there is shortage of engineer at the education offices. In case when there is shortage of engineer even from water office and if there is a construction office at the woreda, the engineer from the construction office can participate in the field appraisal to see technical issues in the site selection for the construction of the latrines/sanitation facilities. The field appraisal report shall be filed at the project file opened in the education office.

The purpose of the field appraisal is to verify the different feasibility criteria of the proposed institutional WASH facilities construction. The field appraisal will be carried out by Woreda Appraisal Team (WAT) members (mainly experts from WoW, WoH & WoE) who are properly trained on the procedure. The composition of the WAT may vary with 2-3 experts, but each team is expected to have at least one technical expert and one expert with ability to cover sanitation, gender, IEC as well as management related aspects. Field Appraisal format for institution water schemes is presented in Annex F.6 and for institutional latrines is presented in Annex F.7 of this manual and the report will be filed in the institution file opened at the respective offices.

In addition to verifying the feasibility of WASH facilities construction, the WAT may propose corrective actions, such as budget corrections, site re-selection, etc. Some of those corrections may be implemented immediately and the application revised on the spot. In the latter case, the appraisal will be done on the revised application.

The appraisal team will submit its field appraisal report to the WWT for approval by completing (filling) the approval format presented in Annex F.8.

The following are the highlights of the criteria used in the field appraisal in order to verify the applications.

Table 4. The field appraisal criteria to be used for new institutional water construction

Appraisal criteria	Particular aspects considered in evaluation
1. Importance of the Project to the community	a) What is the **present unprotected source of water**, its condition, distance, its nature and its present use to the institution? b) Are there any **existing developed water schemes** which serve the institution community now? If yes, what is the source and at what distance it is located from the institution? c) Verify the number of beneficiaries (students in schools and patients/day for health institutions) and staff of the institution? d) Is the water scheme construction the **priority needs** of the institution?
2. Social Feasibility	a) Is the institutional WASHCO organized (PTAs or HC)? b) Is the **disability data** in the application reliable? c) Verify if the design of water scheme is **disable** friendly? d) Existing agreement with the **owner of the land** where the water schemes is to be constructed if site selected is on individual land outside the institution compound.
3. Technical Feasibility	a) Check the **proposed water source** in terms of quantity, quality, location, convenience for development and use after construction.
4. Environmental Feasibility	a) Check/identify the possible risks, rank, and prepare risk management and monitoring plan for **social, environmental** and **climate risk screening (SECRS)** issues of the project.
5. Project Implementation & costing	a) Prepare feasible project implementation plan b) Is the project cost still feasible and realistic after revising the unit prices as per the field appraisal?

Appraisal criteria	Particular aspects considered in evaluation
6. Project Sustainability	a) Verify if the institution community is **committed** to cover the operation and maintenance (O&M) costs of the water scheme? b) Verify on how is the collection of **O&M funds** has been planned? c) Verify on how the institution community is thinking to avail **spare parts** for maintenance and carrying out the actual **preventive** and **corrective maintenance**? d) Verify how the institution community has planned to ensure the **water quality?** e) What type of training do the institution committee members, WASH and gender club members need to operate & maintain the project once construction completed? f) Is the institution willing to have its own **WSP^{++++}** plan as part of the overall sub-catchment level WSP^{++++} and implement it?

Table 5. The field appraisal criteria to be used for institutional water rehabilitation

Appraisal criteria	Particular aspects considered in evaluation
1. Importance of the Project to the community	a) What is the type water supply scheme to be **rehabilitated** and the present condition of the scheme? b) What is the type of water supply in use by the institution if the water scheme needing rehabilitation is not giving service? c) Verify the number of beneficiaries (students in schools and patients/day for health institutions) and staff of the institution? d) Is the rehabilitation of the water scheme the **priority needs** of the institution?
2. Social Feasibility	a) Is the institutional WASHCO organized (PTAs or HC) and functional? b) Is the **disability data** in the application reliable? c) Verify if the design of water scheme is **disable** friendly?
3. Technical Feasibility	a) What are the **types of defects** for each component of the scheme needing rehabilitation? b) What are the **types of rehabilitation works** required for each scheme component (if possible, quantity the rehabilitation works needed)?
4. Environmental Feasibility	Check/identify the possible risks, rank, and prepare risk management and monitoring plan for **social, environmental** and **climate risk screening (SECRS)** issues of the project.
5. project Implementation & costing	a) Prepare feasible project rehabilitation plan b) Is the project cost still feasible and realistic after revising the unit prices as per the field appraisal?
6. Project Sustainability	a) Verify if the institution community is **committed** to cover the operation and maintenance (O&M) costs of the water scheme? b) Verify on how is the collection of **O&M funds** has been planned? c) Verify on how the institution community is thinking to avail **spare parts** for maintenance and carrying out the actual **preventive** and **corrective maintenance**? d) Verify how the institution community has planned to ensure the **water quality?** e) What type of training do the institution committee members, WASH and gender club members need to operate & maintain the project once construction completed? f) Is the institution willing to have its own **WSP^{++++}** plan as part of the overall sub-catchment level WSP^{++++}?

5.2.2.1 Site selection criteria for school latrines and MHM facility

Getting the right site selection for school WASH facilities (latrines and MHM) is the first important job in ensuring they are usable by students. Factors (checklist) to consider in locating toilet blocks are set out below. Inevitably, with all these factors to consider and harmonize, the location of school toilets is going to be a compromise. This reinforces the need for consultation and engagement of girls, boys and their teachers.

The direction of the wind, the location of the boundary fence, soil conditions, borehole placement, and the presence of public road ways and streets in and outside of the school must be factored into the final decision.

The important factors to be considered in school latrines construction site selection are: -

- The distance from the toilet block to the classroom, if possible, should be at least 30m away. Latrines more than 50m away may be too far for a small child.
- There should be some distance between the latrine and the boundary wall of the school. If the toilet is placed on the boundary, there may be a risk of students extending their trip to the toilet to a trip outside the school. Equally, girls may feel insecure so close to the boundary of the school. Here it is best to get their opinion.
- The site of the latrine blocks needs to have sufficient space area, 5-10m, from the fence for suction trucks to access the latrine blocks and remove (de-sludge) the content.
- The distance between the boys' and girls' toilets should be decided through consultation. For some schools 20m or more may be needed to secure the privacy and security needed by girls.
- The latrine should be a minimum of 30m downstream side distance from a well or borehole to avoid any.
- Future plans to expand the school are another consideration in the design.
- Soil conditions – avoid rocky outcrops, unstable ground conditions and depressions with a shallow water table. A small earth auger can be used to test ground conditions if there is any doubt.
- Drainage – ensure that rain water cannot flood the pit.
- Pathway accessibility of latrines to users including disabilities.

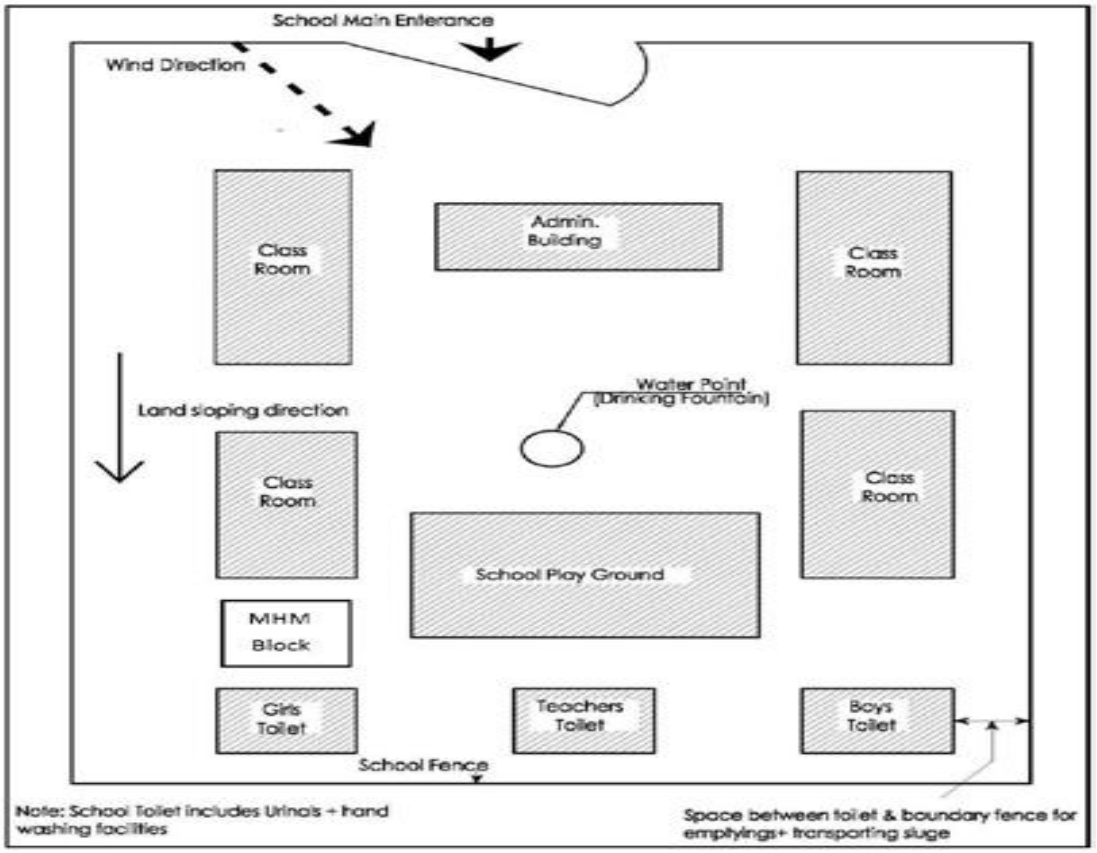


Figure 3.2. One possible layout option for locating WASH facilities in the school compound

The following (shown in table 4) are the highlights of the criteria to be used in the field appraisal of institutional latrines in order to verify the application (Annex F.7):

Table 6. The field appraisal criteria to be used for institutional sanitation/latrine

Appraisal criteria	**Particular aspects considered in evaluation**
1. Importance of the Project to the institution	a) What are the **institutional sanitation facilities/latrines available at the institution**? If there exists, please assess the condition of the latrine/s. b) Verify the number of beneficiaries (students in schools and patients/day for health institutions) and staff of the institution? c) Is the latrine construction the **priority needs** of the institution?
2. Social inclusion Feasibility	a) Is the institutional WASHCO (PTAs or HCs) organized? b) Is the **disability data** in the application reliable? c) Do **girl students participate** in the site selection? **d)** Are the selected construction sites at schools give privacy & security for girl students, preferably the girls' latrine be located at minimum distance of 15 meters from boy's latrine? **e)** Verify if the designs & selected latrine site are **disable students** and **patients** friendly? f) Verify the distance to the latrines from the institution's boundary wall. Especially for schools if the latrines are placed very close to the boundary, there may be a risk of students extending their trip to the latrine to a trip outside the school. In such a case, particularly girls may feel insecure & it is best to get their opinion.
3. Technical Feasibility	Check the **proposed sanitation facilities** in terms of location, convenience for development and use after construction.

Appraisal criteria	Particular aspects considered in evaluation
	a) Verify the soil condition of the selected latrine site avoid rocky outcrops not to make the pit digging difficult & unstable ground conditions so that the structure will not collapse. b) **For schools,** verify that the distance from the latrine block to the class is between 30 and 50 meters, if possible. More than 50 meters may be too far for a small child in a desperate hurry, and in terms of toilet management and upkeep. c) Verify the location of the latrine with respect to the future plans to expand the school. d) **For health institutions,** verify that the latrine is located a minimum of 6 m away from the health centre or health post blocks for patients not to travel long distance and yet not to create nuisance or bad odour.
4. Environmental Feasibility	a) Does the design include adequate provision for proper drainage and fencing work or any other protection measures around the latrine? b) Verify the site for the latrine construction is located on raised ground in order that rain water can drain away easily. c) Verify that the distance of the latrines to a well or borehole is minimum of 30 meters to avoid any risk of contamination
5. Project Implementation & costing.	a) Prepare feasible project implementation plan b) Is the cost still acceptable and realistic after revising the unit prices as per the field appraisal?
6. Project Sustainability	a) Verify what **roles** each stakeholder for schools (students, teachers, school administration, PTAs, & parents) and for health institutions (institution staff & health committee) will have in the management of the facilities. b) Verify how the **daily** and **weekly cleaning** of the latrines are intended to be handled. For example, in schools by organizing the students to clean latrines regularly to a roaster, supervised by teachers. c) Verify how the **operation costs** (payment for cleaner, cleaning materials etc.) & **maintenance costs** of the sanitation facilities to be covered. d) Verify how the **collection & management** of money required for operation & maintenance of the facilities have been planned, if any. e) What type of training do the institution committee members need to operate & maintain the project once construction completed?

5.2.3 WWT Approval

After having the result of the field appraisal, the WWT will take a decision to approve, postpone or reject the proposed Project.

The decision of the WWT is made using format (Annex F.8).

Applicants will be informed of the result of the WWT decision in writing (Annex F.9).

5.2.4 Procurement and contracting

The general structure of the procurement methods to be used for the institutional WASH implementation is the Ethiopian Federal Government Procurement and Property Administration Proclamation no 649/2009 and the Federal Government Public Procurement Directive issued by the Ministry of Finance and Economic Development (MoFED) June 2010 which regions have adopted & translated to their working languages and distributed to each woreda finance office for use.

In the procurement process the WASH sector office (water, education or health) experts depending on the type of the project to be implemented shall prepare a tender document

together with the woreda finance office. The woreda finance office advertises the tender, the woreda procurement committee analyzes tender in this case an expert from the sector office has to be available, i.e., water office experts for water schemes tender, health office expert for sanitation facility tender for health institutions and education office experts for sanitation facilities tenders for schools.

After the tender analyzed and winner contractor identified depending of the type of the project the water office, the education office or health office head signs contract agreement with the winner contractor. Construction progresses, the WASH office technical expert conducts construction supervision, when payment reaches the contractor prepare payment, the sector office expert/supervisor checks the payment and the sector office head approves the payment and requests the finance office to effect payment to the contractor. Then the finance office effects payment to the contractor based on the request made by the sector office and approved payment certificate by the sector office head. In case where there is a construction office in the woreda, the supervision for the construction of intuitional latrines be made by an engineer from the construction office. Even the engineer shall participate in the preparation of tender document and analyses of the tenders.

During the contracting of the construction works the appropriate grade and license of the contractor as per the government regulation has to be advertised depending on the type of the and the estimated construction cost of the WASH facility to be constructed.

5.2.5 Fund management and reporting

The woredas finance office is responsible for the management of and reporting of funds at the woreda level. As the sources of funds for institutional WASH implementation are two (GoF and GoE), the reporting of the fund use to the bureau of finance (BoF) shall follow the reporting system designed for COWASH IV for each source of funding.

5.2.6 Project completion/handing over

As the implementation of the institutional WASH facilities does not fully follow the community managed project approach, handing over of the completed project to the institution for properly managing the system is very implementation. In additions as there is money to be retained by the woreda finance office for a year, there is a need to have proper handing over of the project from the contractor to the client sector office and the institutional committee.

Therefore, depending on the type of the project water or sanitation, and at schools or at health institutions a project completion handing over format has to be prepared and filled and signed and shared one copy to the contractor, one copy to the woreda sector office and one copy to the institution committee (PTAs or health committee).

5.2.7 Training of stakeholders in Operation & Maintenance (O&M) of WASH facilities

Once the construction of the WASH facilities is completed, the project enters into operation and maintenance phase where there is a need for involvement of different stakeholders.

For this purpose, training of the stakeholders in the operation and maintenance of the institutional WASH facilities is very important.

In schools training of Partners and Teachers Associations (PTAs), school administration staffs, students, WASH and gender clubs, cleaners/janitors, guards and water operators (depending on the type of water supply technology) be given appropriate training to properly operate, use and maintain the facilities.

In health institutions training of health committees, health institution administrative staff, water scheme operators (depending on the type of water supply technology) and cleaners be given appropriate training to properly operate, use and maintain the facilities.

6 SUPPORT FROM ZONE SECTOR DEPARTMENTS AND BUREAUS

Although the actual implementation of the WASH facilities are to be handled by the woreda sector offices, different supports from the zone sector departments and the region bureaus is mandatory for the effective implementation of the projects. The respective zone sector departments and bureaus which are expected to give support to woredas when needed are: -

- Zone water department and water bureau.
- Zone education departments and education bureau.
- Zone health department and health bureau.
- Zone finance deportment and finance bureau
- Zone construction department and construction bureau.

The support expected from the zones and bureaus include: -

- In the site selection for well drilling and design of rural piped schemes for the institutions if beyond the capacity of the woredas.
- Tender document preparation and cost estimation for the institutional latrines and water schemes.
- In the tender analysis for the contracting of the institutional latrines and water schemes construction.
- In the construction supervision of institutional latrines and water schemes. Especially as the new school latrine/sanitation design facility needs experienced engineers, construction supervision support from zone or bureau level experts is very important.

7 REPORTING & OTHER FORMATS

The formats attached in this implementation manual are those required only for preparatory activities for institutional WASH implementation (application preparation, appraisal and WWT approval) formats. The formats for fund management and reporting shall follow the GoE system hence such formats are not included in this manual.

Category 1: Formats to be used by WASHCOs (Institution)

Format Code	Format Name	Prepared By	Contents of the Format	Distribution	Remark
1A (Annex F.1)	Institutional Water Application form	Institutions with support from KWT	Information which help to receive CMP grant	CMP Supervisor or WaSH Sector office Heads	1. Application form can be found in WWO office & kebele manager office 2. Application form can be prepared in Working languages (Amharic, Oromifa, Tigrigna or Sidamigna) if translated by the RSU.
1B (Annex F.2)	Institutional Sanitation/Latrine Application form	Institutions with support from KWT	Information which help to receive CMP grant	CMP Supervisor or WaSH Sector office Heads	1.Application form can be found in WWO office & kebele manager office 2. Application form can bel be filled in Working languages (Amharic, Afaan Oromo, Tigrigna or Sidamigna) if translated by the RSU.

Category 2: Formats to be used at Woreda level

Format Code	Format Name	Prepared By	Contents of the Format	Distribution	Remark
2A (Annex F.3)	Projects follow up form	CMP Supervisor or WASH Sector Heads	Steps in the CMP project cycle	To be kept in the project file	
2B (Annex F.4)	Office appraisal report form (water supply and latrine)	CMP Supervisor for water (health & schools), health office COWASH focal person for health latrines and education focal person for school latrines.	All Office appraisal criteria	The appraisal result will be submitted to WWTs	1. Can be prepared in Working languages (Amharic, Afaan Oromo. Tigrigna or Sidamigna) if translated by the RSU. 2. To be filled when applications are submitted and kept in project files

Category 2: Formats to be used at Woreda level (Continued)

Format Code	Format Name	Prepared By	Contents of the Format	Distribution	Remark
2C (Annex F.5)	Field appraisal report form for institutional water supply	CMP Supervisor for water (health & schools), health office COWASH focal person for health latrines and education focal person for school latrines.	All field appraisal criteria	The appraisal result will be submitted to WWTs	1. Can be prepared in Working languages (Amharic, Afaan Oromo, Tigrigna or Sidamigna) if translated by the RSU. 2. To be kept in WASHCO files
2D (Annex F.6)	Field appraisal report form for institutional sanitation/latrine	Members of appraisal team (CMP supervisor & sector offices technical staff).	All field appraisal criteria	The appraisal result will be submitted to WWTs	1. Can be prepared in Working languages (Amharic, Afaan Oromo, Tigrigna or Sidamigna) if translated by the RSU. 2. To be kept in WASHCO files
2E (Annex F.7)	Acknowledgement of receipt of application and informing Office appraisal result	CMP Supervisor or WASH Sector Heads	- After assessment, WASHCO will be notified on one of the following (in writing). - The application has passed for field appraisal - Additional documents are needed - The application is not accepted.	To the WASHCOs, which submitted the application	1. Can be prepared in Working languages (Amharic, Afaan Oromo, Tigrigna or Sidamigna) if translated by the RSU. 2. Two copies will be prepared out of which one will be given to the WASHCOs and the other will be kept in the project file.
2F (Annex F.8)	WWT Project approval form	CMP Supervisor or WWT Secretary	Information needed by the WWTs to approve projects	To WWTs	1. Can be prepared in Working languages (Amharic, Afaan Oromo, Tigrigna or Sidamigna) if translated by the RSU. 2. To be prepared in one copy and kept in the project file

Category 2: Formats to be used at Woreda level (Continued)

Format Code	Format Name	Prepared By	Contents of the Format	Distribution	Remark
2G (Annex F.9)	Letter to institution informing approval of project application	WWT Chairpersons	- Approved project budget - Necessary information to sign the Funding Agreement - Invitation to sign Funding Agreement.	To head of the institution of the approved project	1. Can be prepared in Working languages (Amharic, Afaan Oromo, Tigrigna or Sidamigna) if translated by the RSU. 2. Two copies will be prepared out of which one will be given to the WASHCOs and the other will be kept in the project file.
2C (Annex F.10)	Project construction supervision report form	CMP Supervisor and the person assigned for supervision from the health or education offices.	- Construction progress, - Financial management - Community contribution - Problems encountered - Solutions proposed	- To be prepared in one copy after each supervision - To be kept in the WASHCO file	

8 AUDIT

The audit processes and procedures of the Government of Ethiopia shall be used.

9 SOME IMPORNAT POINTS IN THE COBSTRUCTION OF SCHHOL LATRINES

9.1 CONSTRUCTION OF COMPOSTING TYPE "ALTERNATING DRY TWIN PIT" FOUR SEAT LATRINES FOR SCHOOLS (Extracted from WASH Facilities IN School Design & Construction Manual by MoE, 2019)

9.1.1 Description of composting type dry pit latrines and how they operate

The most feasible latrine design option for rural school is the **composting type of dry pit latrine**. In case where there is piped water in the school compound, a **latrine with piped water** can also be an option to be constructed in rural schools. As the **composting type** is the most common in rural areas, this section of the manual includes some important points in the construction of composting type dry pity latrines for schools (the most common latrine type in rural schools).

9.1.2 Composting type VIP latrine

In many schools in Ethiopia where dislodging is not possible, when school toilets are full, the pit is covered with soil and abandoned. Human waste is a valuable resource for soil conditioning and crop production. There is a global effort to support the widespread use of human waste for agricultural purposes since it provides organic fertilizer. A composting toilet has become a widely used latrine in many parts of the world and it is also being adopted in Ethiopia. If it is properly constructed and used, it is a sustainably usable toilet that can service three or four times the life of other simple latrines.

A composting toilet is a toilet in which composting of human waste takes place. Usually, the composting chamber is located underneath the slab of the latrine block. When the pit chambers are full, they are sealed for minimum of one year to allow the waste to aerobically decompose. To keep the latrine operational, another drop hole is opened in the same cubicle (toilet room).

Emptying the compost

There are considerable challenges when removing and transporting compost. The main are culture of the people and health risk. There is a need to know when exactly to empty the pit to minimize the health risk. The other consideration is to plan a site where the compost can be used effectively to provide an economic return. There is a need for the compost to mix with soil for effective impact. Trying to empty the pit before the recommended time (minimum one year) can have serious health and environmental consequences and this should be avoided.

The most widely used method for emptying compost is to scoop manually using a shovel after a minimum of one year sealed (anaerobic) condition and this is relatively easy for shallow pits. The compost is accessed through a service hole provided at the latrine slab. A concrete cover

slab is removed to open the access hole. After opening the cover, It is advisable to allow a few hours for proper ventilation.

The basic composting type "alternating pit toilet" that is discussed here is a four-seat latrine (see figure 9.1). The four-seat latrine has five shallow pits, separated by a partition with one superstructure. The alternating twin pit VIP latrine differs from conventional deep pit VIP latrines in the layout of the floor of each toilet cubicle. In the alternating twin pit VIP design, each cubicle accommodates two drop holes, one over each pit and one being temporarily sealed with a 30mm concrete tile. Only one pit is used at a time.

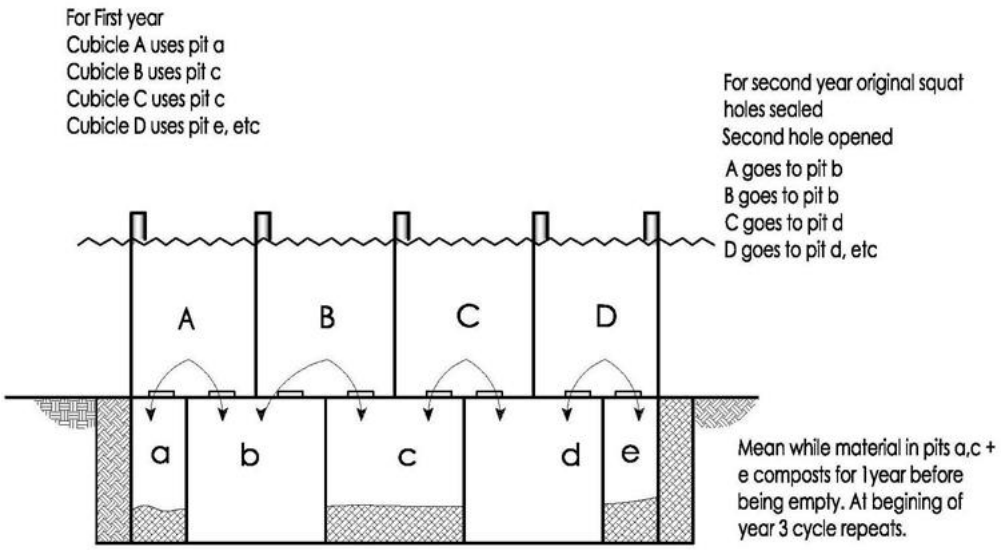


Figure 9.1: Alternating VIP Design: basic operation

When the first seat is full, the drop hole is sealed and the second pit is opened to become operational. At this stage, the first pit contents are left to compost for a year. Alternatively, taking into account child friendly principles, the school authorities and/or Parents and Teachers Association (PTA) may want to make better and more regular use of composted fecal matter and urine to support agricultural production.

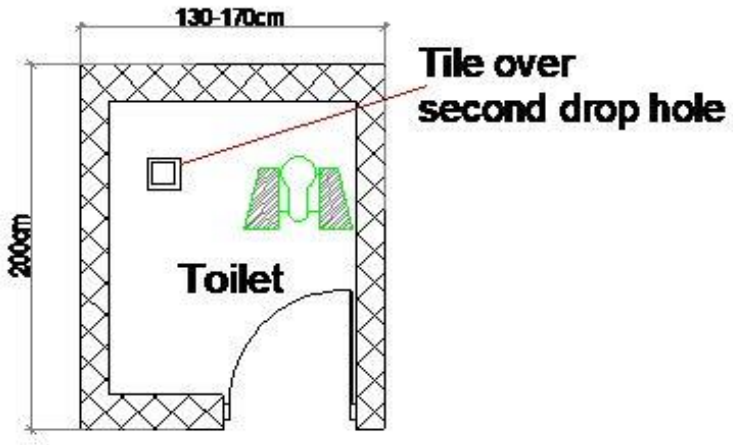


Figure 9.2: Floor (latrine seat) layout – alternating twin pit

9.1.3 Safe excavation

Digging a large pit for latrine blocks can be tricky, or even dangerous. The soil could be loose, and the walls could collapse at any time during the digging. Some sites could have water within 1-2m depth and may find it difficult to dig deeper. Other sites could be rocky making it difficult to dig using local equipment and labor. The wall of the pit must be lined with masonry having a thickness of about 40-50cm on top and up to a maximum of 120cm at the bottom, depending on the soil type and moisture condition of the soil.

9.1.4 Digging the pit, construction of the pit wall and bottom part of the pit

Once the pit is excavated, the wall is lined with masonry. The masonry wall will have a top width of 40-50cm, and the bottom width ranges between 40-120cm depending on the soil as shown in the annexed drawings. The soil of the pit floor is sloped towards the access hole side/location for easily removal of compost. The access hole to the content of the pit is as shown in the drawing.

9.1.5 Partitioning the pit and lining the wall of the partitions

Once the pit wall is lined with masonry, the next step is to partition the pit with solid concrete blocks (SCB), reinforced concrete beams and columns as shown in the drawings for compost type latrines. The independent chambers18 are partitioned as per the design spacing shown in specific drawings. Then the wall of the partition for each chamber, except the floor, is plastered with cement (three coats) to make it watertight. The school latrines must be safe, with properly lined partition walls supporting the slab. Latrines should be inspected regularly for any sign of cracks on the slab or wall of the superstructure.

SCB walls with reinforced concrete footing, beam and columns are provided in dry compost type pit latrines to reduce the risk of failure with overturning when the either side of the partition pits are full and empty. SCB with plastering on both sides and proper anchorage to floor slabs is needed for dry pit latrines in swampy and rocky areas as the height of the pit is only 1.5m.



Figure 9.3: Partition wall details for composting latrine

Care must be taken not to use big stones for partitioning the pit so that the volume of chambers is not reduced from what is shown in the design drawings. The selection of the construction material depends on the availability of the materials and skills required, and the cost and available budget. The four-seat latrine block will have five chambers, similarly the six will have seven chambers and so on with one additional pit

9.1.6 Superstructure of the latrine block

Having completed the substructure, the next stage is to complete the toilet superstructure. This sits on top of the sub-structure. The doors of the toilet cubicles are either to open inwards or out wards. The cubicle door for disabled toilets should open outward while doors for the other rooms should open inward.

Grade beam, slab design and layout

In a four-seat latrine (as an example), both sides of the shorter grade beam rests on the masonry wall in both sides of the latrine block. The toilet floor or the slab is cast on the grade beam. Monolithic 150mm thick RC slab is then cast in situ with 30cm-by-30cm grade beam as shown in the annexed drawings. The grade beam at the latrine block sides rests on the top of the masonry wall. For a composting toilet with twin drop holes are cast on the slab and its canter located as shown in the drawings from the wall. The non-composting toilet will have one single drop hole at the centre of each cubicle.

Cover slab for access-hole to each pit

The slab that covers each inspection access hole will have a dimension of 70cm-by-70cm concrete cover slab with 60cm-by-60cm access hole as specified in the drawings.

Vent pipe with a mesh wire on top for trapping flies that enter in to the pit

A 110mm PVC pipe is installed on the slab as a vent pipe. The vent has a mesh wire (for fly trap) on top as shown in the drawings. The upper end of the vent pipe extends by 50cmfrom the top of the highest roof level so that there is ventilation which facilitates the removal of the warm air from the pit. In placing the vent pipe on the slab, the lower part of the vent pipe should protrude from the lower side of the toilet floor slab by 5cm so that warm air can leave the pit.

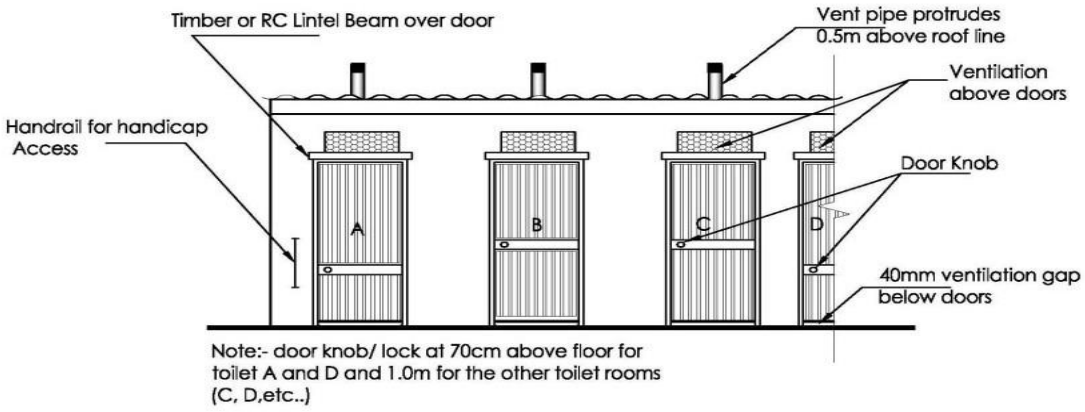


Figure 9.4: Superstructure Walls and Doors

Latrine block walls, cubicle partitions and doors

Each cubicle has a minimum floor area of 1.2m (width) by 1.6m(length). The cubicle for students with a disability is 1.5m by 1.6m. This floor size allows the doors to open inward without squeezing the users of the toilet. The door of the disability friendly latrine opens outwards. The design of the cubicles for students with a disability allows for more space to manoeuvre a wheel chair or for a caregiver. The disability friendly toilet door should measure 100cm and have an emergency bottom door attached to the main door.

The standard materials for construction recommended in this manual are concrete blocks.
The roof, sloping as shown in the drawings, rests on a wooden truss supported by the block work. Doors are an important component of school toilets as they are essential to guarantee privacy and security for the user. A simple door lock is placed on the inside and outside with 70cm and 90cm height for disable and other rooms respectively. PVC doors are preferred, but steel timber doors with 40cm of the bottom covered with plastic material inside to reduce corrosion, can also function.

Roof and vent pipe

The roof work will cover both the toilet rooms and urinals. The roof is sloping down from front to back with an overhang from the wall of 30cm on all sides. It is covered with Gage (G32) galvanized corrugated iron sheet (CIS). Seasoned eucalyptus wood is recommended for the timber frame, which is fastened to the top of the concrete beam with 6mm tie bar. A 30cm high, 70cm wide gap with wire mesh provides ventilation and ensures that the toilets are not too dark to discourage their use.

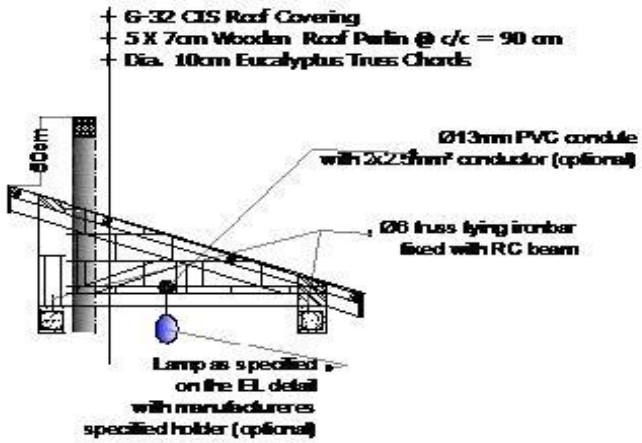


Figure 9.5: Detail of roof truss

The 110mm diameter PVC vent pipe – one for each partition - is critical to the operation of the toilet. A dark coloured or black- painted pipe is preferred, as the heating effect from sunlight absorption enhances updraft. The pipe should be secured with wire ties to the wall and grouted in place. A 1mm galvanized wire mesh is secured at the top of the pipe to trap flies in the pit. The top 50cm of the pipe should protrude above the roof line to maximize ventilation effect.

9.1.7 Design and construction of WASH facilities for students with disabilities

Facilities that guide students with physical disabilities

The first important facility needed for students with disabilities is to construct access roads or foot paths to guide them around in the school to classrooms, water supply and sanitation facilities, and MHM rooms. As an option, raised road side curve provides guidance for visually impaired school children can be provided. Ramps should be constructed at the entrance to the latrine, drinking water supply, handwashing facilities and MHM safe space for those school children using wheelchairs or with mobility issues. A ramp is constructed at a suitable location shown in each annexed drawing and with maximum slope of 8% convenient for users and their support givers although 5% slope is an ideal incline. If the ramp is longer than 6m or changes directions, it needs resting areas of at least 150cm. The ground leading up to the ramp also needs to be suitable for those in a wheelchair or with limited mobility. It must be free from rocks, thick gravel, sand and grass/ plants. Handrails installed on the inside and outside of the toilet help lead users to enter the toilet, to seat themselves, and to leave the room with ease.

Hand rails and disable seat

In both girls' and boys' latrine blocks (dry or piped), one of the toilet rooms is dedicate for students with disabilities. The room is relatively wide (minimum of 1.5m by 1.6m) and it is equipped with facilities that support students with disabilities to use the latrine. All latrine blocks will have ramp access (one or two as shown in each specific drawing) and handrails. A ramp hand rail is made of 1in galvanized pipe as shown in the annexed drawing.

A disability friendly toilet seat is made of plastered HCB box with WC plastic cover, or ready-made ceramic WC. The disability friendly toilet is equipped with a set of 1in galvanized iron pipe handrails as shown in the drawing below. They are positioned horizontally and vertically. Handrails are properly anchored to the ground slab and to the walls.

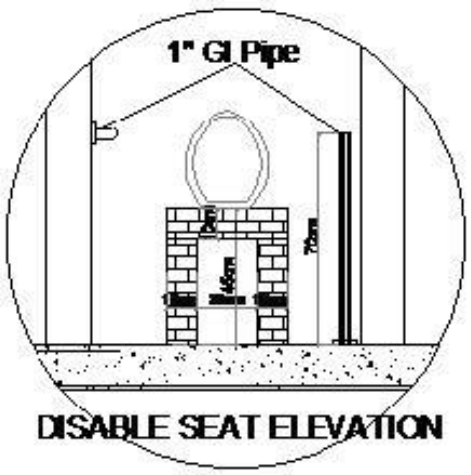


Figure 9.6: Disability friendly toilet seat sectional detail

The toilet room for students with physical disabilities is equipped with a set of hand rails as shown above and they are positioned horizontal or vertical or both conveniently installed

together to support the use of the facilities by the students. A 70cm length horizontal hand rail is installed at 70cm height from the floor anchored to the ground.

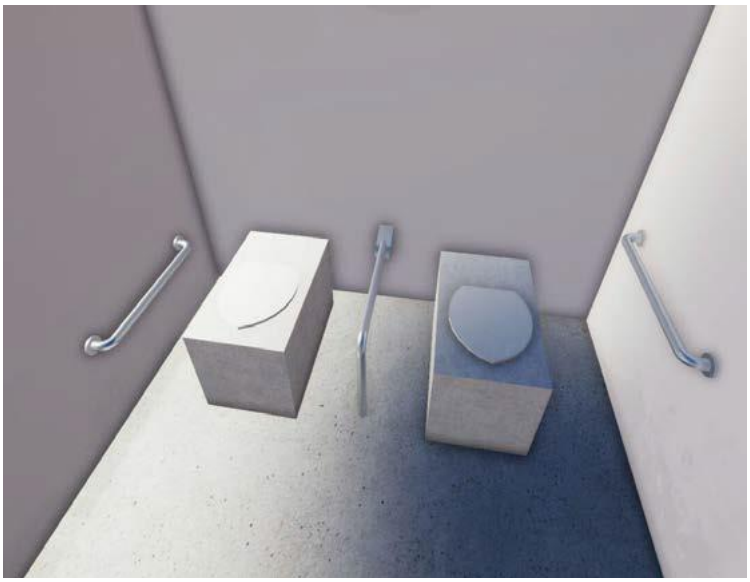


Figure 9.7 Disabled seat detailed design for students with disabilities (Compost type)

9.1.8 Urinals

Urinals are designed and constructed as part of the latrine block structure. Their primary purpose is to reduce pressure on the toilet. Urinals in waterless schools usually have a strong smell. To minimize such effects, urinals need to be cleaned and properly connected to the main latrine pit. The trough should have enough slopes so that the urine can drain off the urinal surface quickly and effectively. The drainage pipe should be easily accessible and remain clean and open for proper functioning. Details are shown in each respective drawing.

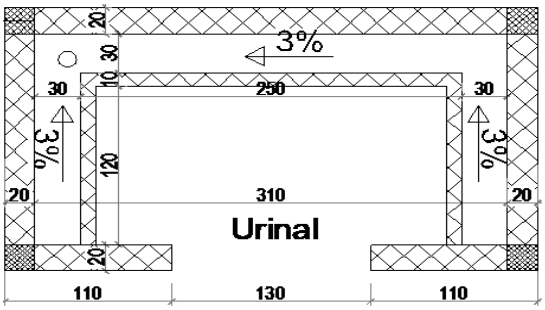


Figure 9.8 Plan of urinal for boys

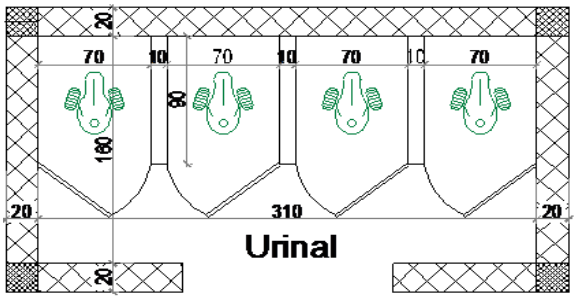


Figure 9.9 Plan of urinal for girls

9.2 MENSTRUAL HYGIENE MANAGEMENT (MHM) FACILITY

According to WHO/UNICEF (2019) menstrual hygiene management (MHM) is defined as "when women and adolescent girls use a clean material to absorb or collect menstrual blood and this material can be changed in privacy as often as necessary for the duration of menstruation. MHM also includes using soap and water for washing the body as required and having access

to facilities to dispose of used menstrual management materials". To enable women and girls to live healthy, productive and dignified lives, it is essential that they are able to manage menstrual bleeding effectively. It is important that they have access to clean materials to absorb or collect menstrual blood, as well as safe water supply and sanitation facilities that allow privacy to change sanitary materials. MHM can enable school girls to remain healthy, empowered, and become more productive in their education and in supporting their family and their country at large.

Schools have started MHM interventions, dedicating a separate room as a safe space for girls experiencing menstruation. It has been reported that the MHM program increases the attendance of school by adolescent girls. However, the rooms that are dedicated for such uses are poorly constructed and have temporary partitions made of clothes, CIS or other which are neither safe nor convenient. Most school girls use school toilets to change sanitary pads, and dustbins are the facilities available to collect used pads. Generally, school toilets are not comfortable for MHM.

9.2.1 Design and construction of a safe space for MHM

The separate building infrastructure is planned to have four rooms:(i) a counselling room, (ii) a waiting room with enough space to accommodate a seat for three school girls, (iii) a resting room equipped with a resting bed and mattress for girls who are ill from menstrual cramps, and (iv) a wash room with a washing basin for washing pads and clothes, elevated water storage container (1000L) or a shower in the case of a school with piped water supply system. In addition, a solid waste (sanitary pad) collection box is designed at the back of the building shown in the drawings. The floor and sectional views of the safe space for MHM is presented below.
Floor plan of the MHM Facility (b) Rear side view (c) Left side view (d) Front view (e) Rear view



Figure 9.10a Floor plan of MHM facility



Figure 8.10b. Right side view of MHM



Figure 9.10c Left side view of MHM



Figure. 9.10d Front view of MHM



Figure 9.10e. Raer view of MHM

10 DRINKING FOUNTAINS (WATER TAPS) AND HAND WASH BASINS FOR

10.1 DRINKING FOUNTAINS (WATER TAPS) AND HAND WASH BASINS FOR SCHOOLS (Extracted from MoE School WASH Design & Construction Manual).

Drinking water taps are designed for schools where there is pipeline water. The drinking fountain or faucets provide direct access to water supply for school children both for drinking and handwashing. The tap has a basin with a functional drainage pipe and soak away pit. It is located at a convenient location and, if possible, should be located 20-30mfrom the playground area.

The number of taps to be installed depends on the number of students in the school. The following table shows the recommended number of taps for different number of students in rural schools. On average in rural areas one water tap is for use to 100 students.

Table 7. Number of drinking fountain (water taps) for rural schools

I.N.	Number of students	Number of taps	Number of stands
1	600	6	1 stand with 3 taps each side of a stand
2	1000	10	1 stand with 5 taps each side of a stand
3	1500	14	1 stand with 7 taps each side of a stand
4	2000	20	1 stand with 10 taps each side of a stand
5	3000	32	1 stand with 16 taps each side of a stand

Basic design of drinking water fountain

Drinking water fountains should be located near playground areas where it is convenient for school children to use them. They should also be designed in such a way that younger, shorter and children living with a disability can easily access them. Guiding pavements, ramps and other structures should be constructed properly to school children with disabilities to have access to drinking water fountains. The dimensions of the drinking water fountain (water taps) should take into consideration the age of the users. One side of the stand could be designed for older and the other for younger children. The height of the tap and the drainage water trough vary for different age groups. For pre-school and children less than nine years old, taps should be 50cm above the ground. For a primary and secondary school children over nine years old, 70cm height is recommended. In both cases, the tap is positioned 25cm above the trough. The photo of one drinking water fountain for school children design that includes different age requirements is presented in figure 10.1 below. In this design, there are five taps on each side of the drinking fountain, and a total of ten children can be served at a time.



Figure. 10.1 Photo of 10 taps drinking water fountain at schools

The detailed architectural drawings, dimensions and specifications for school drinking water fountain with 12 taps (6 on each side) is shown in figure 10.2. The spacing of each tap on the stand is 40cm distance along each side of the stand. The drinking water fountain can be adapted to local conditions.

Types of Taps/faucets used for drinking fountains

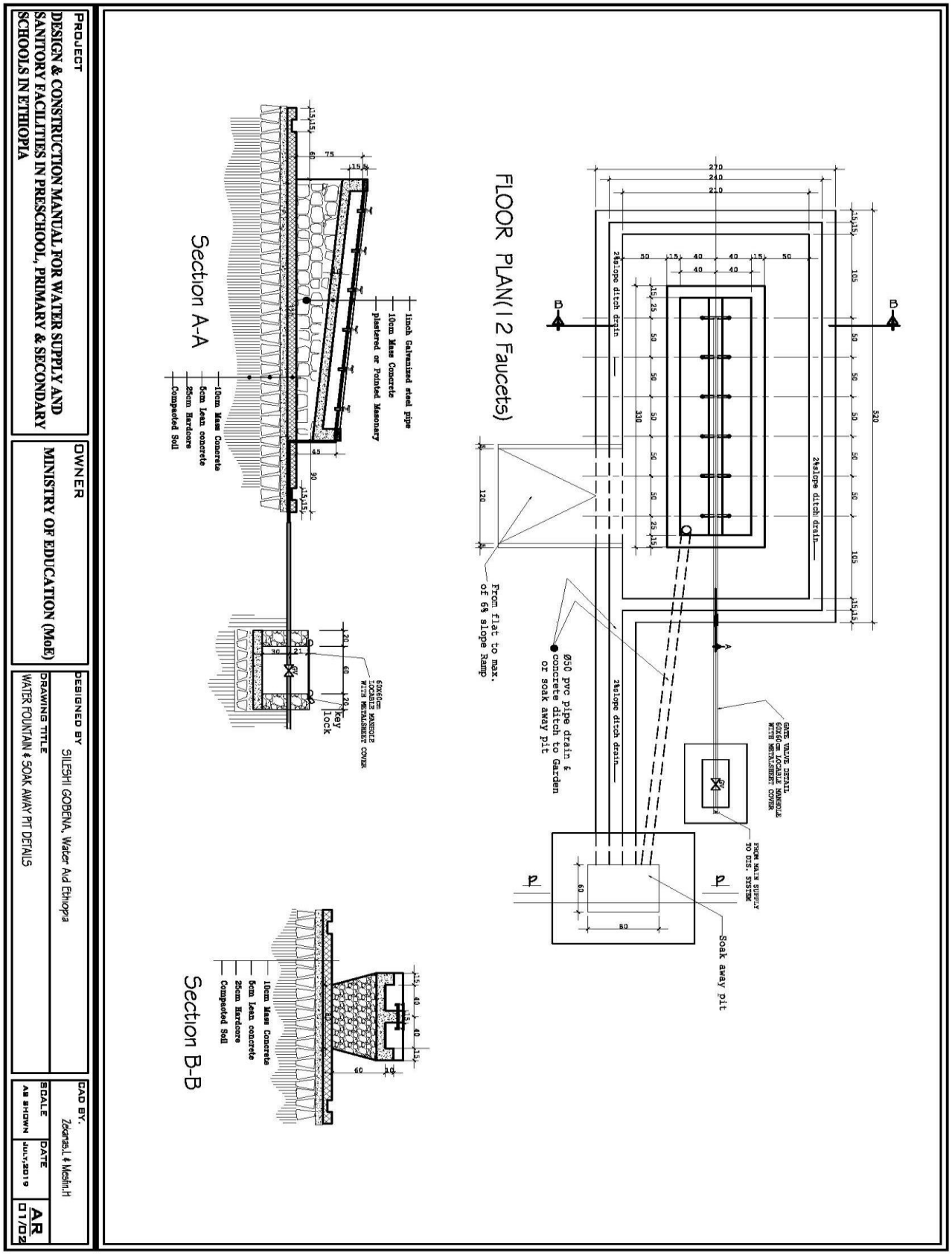
There are different types of drinking and hand washing taps for school children are available in the market. Careful selection of the water tap type should ease tap operation and suit the different situations and needs of the school children, particularly for small children in preschool and school children with disabilities.

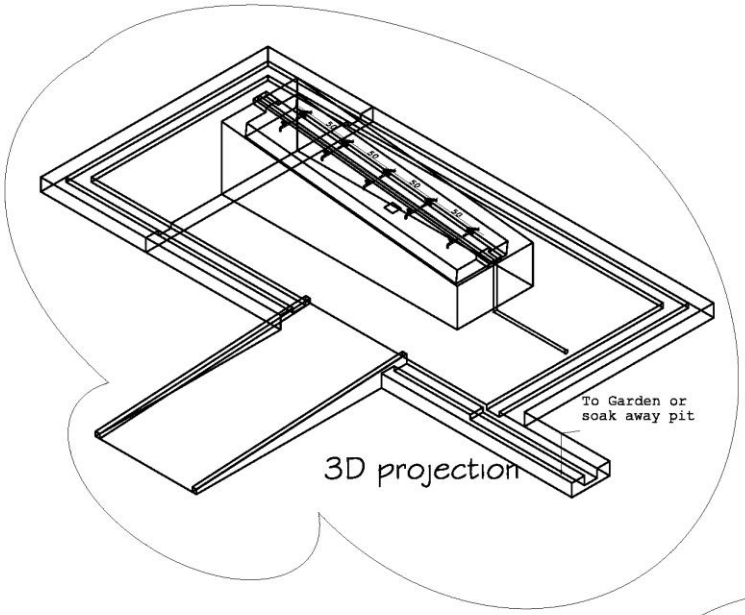
There are different water taps on the market that open and shut the water flow mechanically. A tap with a lever bar/level handles that moves left and right to open and shut the flow of water are suitable and durable and are used in many institutions across Ethiopia. It is not difficult for small children and disabled children to operate this type of tap both for drinking and for hand and face washing. The recommended tap type for schools with good quality services and longer service life are half inch faucets with a lever handle. The excess water on the basin must also be connected to a drain pipe and soak away pit or infiltration trench.



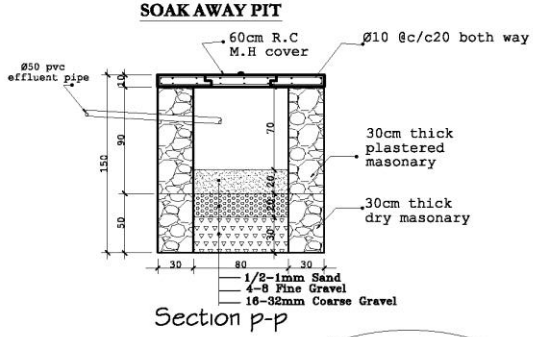
Figure 10.2. Recommended tap type for schools

Figure 10.3. Design of 12 taps schools water fountain

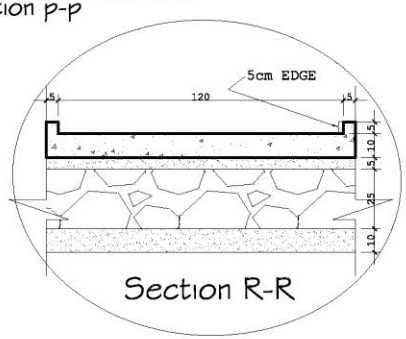


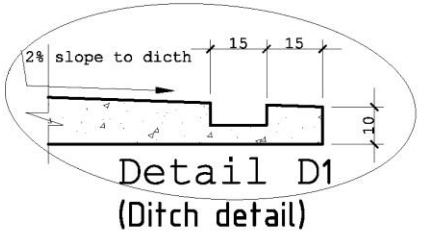


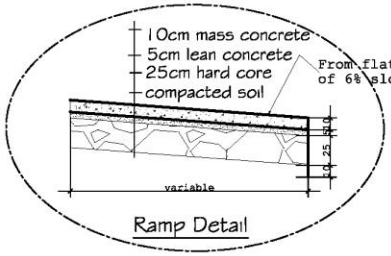
SOAK AWAY PIT



Section p-p







NOTE

1. Any Change based on site level engineering judgment is possible.
2. Handrail can be constructed a long side of ramp where necessary.
3. Ramp should be constracted only on one side of the water point in the direction of faucet designed for Equity and Inclusion aspect.
4. the slope of the ramp should be from flat (plane) to 6% depending on nature of topography.
5. Maximum wheel chair size (1.2m)should be considered to constract ramp (to determine width)
6. 5cm thick edge (sort of Guiding edge)should be casted at two at two sides of ramp to protect sudden sliding of wheel chairs .
7. Ramps to be construct should be some what rough to ease walking for curanch users.
8. Each and every water point constructed should be as per this design.
9. Without compromsing the average distance from users, water point shall be located on relatively flat site as much as possible.

PROJECT	OWNER	DESIGNED BY	CAD BY.
DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITORY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA	**MINISTRY OF EDUCATION (MoE)**	SILESHI GOBENA, Water Aid Ethiopia	Zekarias.L & Mesfin.H
		DRAWING TITLE: WATER FOUNTAIN & SOAK AWAY PIT DETAILS	SCALE: AS SHOWN; DATE: JULY,2019; AR 02/02

11 INSTITUTIOANL LATRINE DESIGNS TO BE USED IN COWASH IV

As COWASH is a bilateral program working with the government, the institutional latrines design to be used in COWASH IV are: -

a) For schools the designs put in the **"WASH Facilities in Schools Design and Construction Manual prepared by Ministry of Education (MoE), November 2019"**.

The school WASH design and construction manual focuses on introducing different technology options of latrines (piped or flushed latrines, dry pit/composting type VIP latrines), different number of seats of latrine depending on the number of students (4. 6. 8 and 10 seats), Geological formation of the area (for rocky, swampy and normal soil type), cultural diversity (for Afar and Somali regions) and also solid and liquid waste management design options are included in the manual.

Based on the experience from the past phases of COWASH, out of the different design options put in the school WASH design and construction manual, a four-seat dry pit/composting type latrine in normal soil for boys and girl each and the three-seat teacher's latrine for normal soil condition are recommended to be implemented in the COWASH woredas and the design and bill of quantities of those designs are put in this manual.

The following are the justifications why the four-seat composting type latrine in normal soil for boys and girls are highly recommended in rural school in COWASH IV woredas: -

- Most school latrines constructed so far are in normal soil condition.
- As there is no piped water in most of the rural schools, dry pit/composting type is appropriate.
- For rural areas 4 rooms boys latrine serve 300 students (75 students/seat x 4 seats) and 4 seat latrines for girls serve 200 students (75 students/seat x 4 seats) which implies nearly 500 students. This is the average number of students in many rural schools.

But when the specific condition of the school from where application has been made by the school community, the use of other design options in terms of number of seats, foundation soil condition and piped water availability, other options put in the school WASH design and construction manual prepared by MoE can be used for the specific school. For more reference and use when demanded the manual are attached/annexed (Annex 5.1) as separate file with this manual.

b) For health institutions the design put in the **"Health Centre and Health Post Water Supply, Sanitation and Hygiene Facilities Design and Implementation Manual"** prepared by Metaferia consulting engineers in June 2012 under the leadership of Ministry of Health (MoH).

For more reference and use of the manuals, the health WASH manual is attached/annexed (Annex 5.2) as a separate file with this manual.

From these both manuals the designs to be used in COWASH IV are extracted and annexed in this manual as follows.

Annex 1. School latrine/sanitation facilities designs

Annex 1.1 School Latrine design for teachers (one block with 3 seats)

Annex 1.2 Composting Type School Latrine design for Boys (one block with 4 seats)

Annex 1.3 Composting Type School Latrine design for Girls (one block with 4 seats)

Annex 1.4 Menstrual Hygiene Management (MHM) Room for Girls (one block with 4 rooms

Annex 1.5 Concrete ring made incinerator (optional-will be constructed only when needed).

Annex 2. Health facility latrine designs

Annex 2.1 Health post latrine design (one block with 2 seats)

Annex 2.2 Health centre latrine design (one block with 5 seats)

Annex 2.3 Incinerator design and Placenta pit designs

12 BILL OF QUANTITIES FOR THE DESIGNS

Bill of Quantities (BOQ) shall be read and constructed in conjunction with the architectural and structural drawings for each type of school and health latrine/sanitation facilities as shown in Annex 1 and 2 attached to this document. In the school latrines although design and the bill of quantity prepared by MoE put electrical installation as optional as there is less chance of electric line to present in the rural areas. So, during tender document preparation in school latrines construction where there is no possibility of installing electric lines to latrines and MHM room, the bill of quantity for electrical installations are to be deleted from the BOQ to avoid confusion during contract administration.

But in case there is electric line at the school and electrifications of the WASH facility rooms are found to be mandatory, the work break down structure and the bill of quantities for the electric line installation be kept as they are in the tender document to be advertised for the construction work and price be quoted by the contractor.

All quantities given here are estimated quantities of the work to be done and they are not to be taken as actual quantities of the work it varies from site to site based on actual site condition and measurement. BOQs are not to be taken as guarantee that the actual quantities may increase or decrease, and any claim whatsoever submitted for cost or extra expenses incurred from such increase or decrease will not be accepted by the employer/engineer except it fulfils what is stipulated in the contract signed with the contractor.

From those designs to be used in COWASH IV annexed in 1 and 2, the respective bill of quantities is annexed in this manual as follows.

Annex 3. Bill of Quantity for School Latrines

Annex 3.1 Bill of Quantity for School Latrine design for teachers

Annex 3.2 Bill of Quantity for Composting Type School Latrine design for Boys

Annex 3.3 Bill of Quantity Composting Type School Latrine design for Girls

Annex 3.4 Bill of Quantity Menstrual Hygiene Management (MHM) Room design for Girls

Annex 4. Bill of Quantities for Health facility latrine designs

Annex 4.1 Bill of Quantities for Health post latrine design

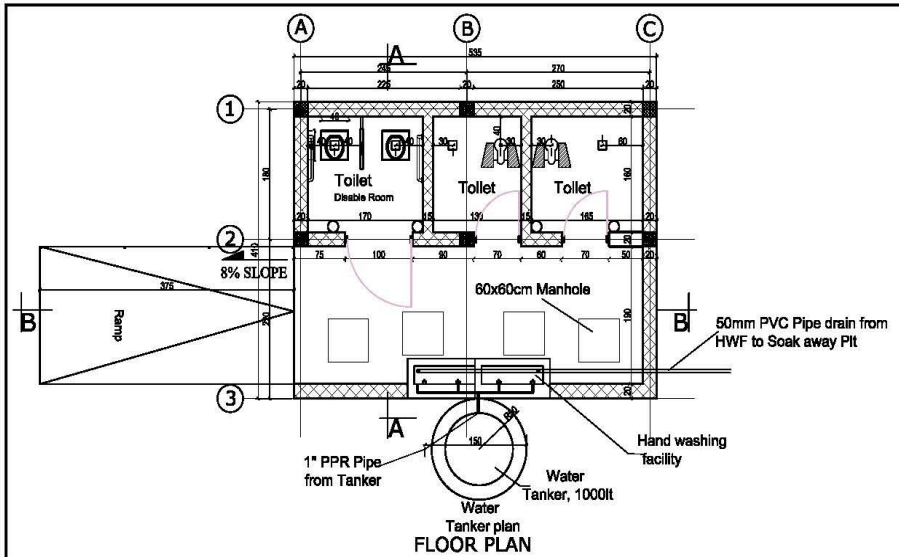
Annex 4.2 Bill of Quantities for Health centre latrine design

Annex 4.3 Bill of Quantities for Incinerator design

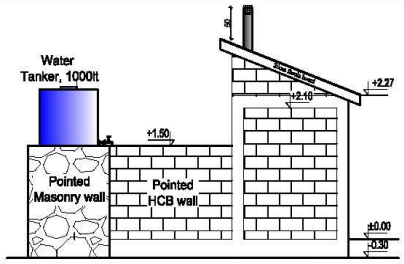
Annex 4.4 Bill of Quantities for Placenta pit design

Annex 1. School latrine/sanitation facilities designs

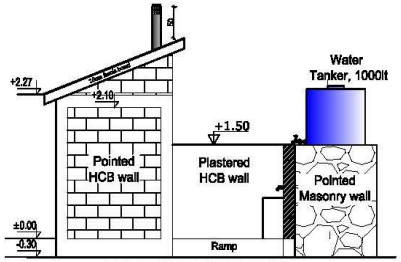
Annex 1.1 School Latrine design for teachers (one block with 3 seats) - Three pages



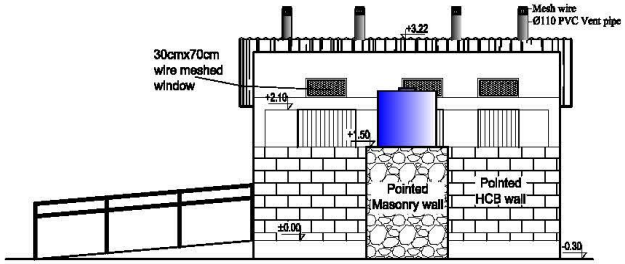
FLOOR PLAN



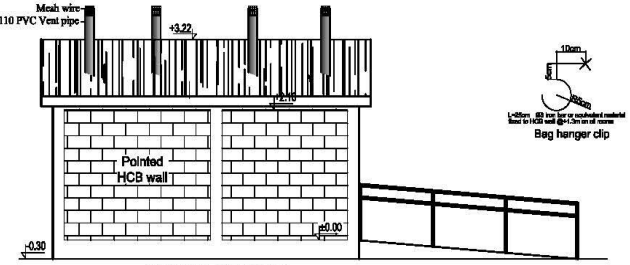
RIGHT SIDE ELEVATION



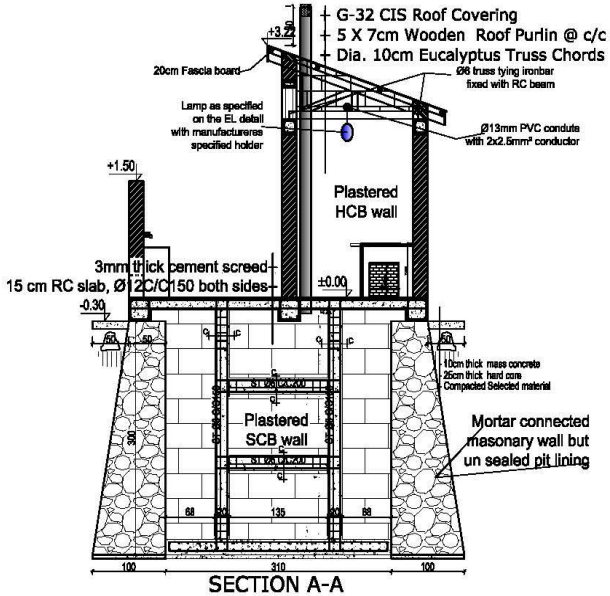
LEFT SIDE ELEVATION



FRONT ELEVATION

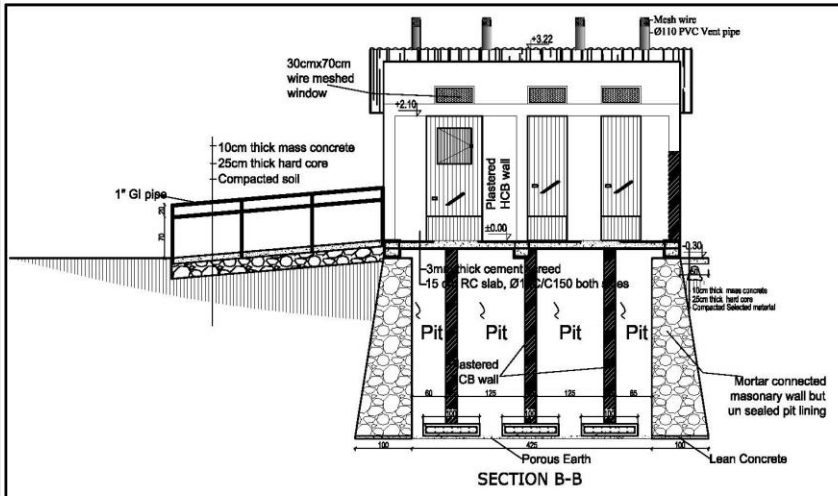


REAR ELEVATION

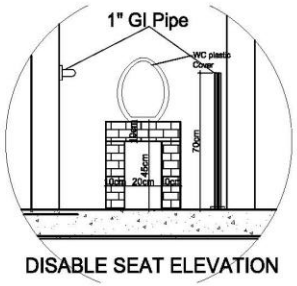


SECTION A-A

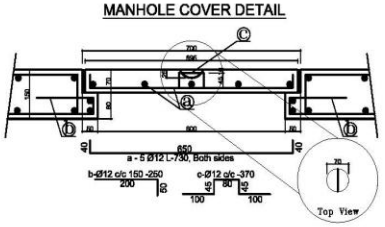
PROJECT **DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITARY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA**	OWNER **MINISTRY OF EDUCATION (MoE)**	DESIGNED BY Mesfin.H PE-634 DRAWING TITLE 3 SEAT COMPOSTING TYPE DRY PIT LATRINE	CAD BY. Mesfin Habtemariam SCALE: AS SHOWN / DATE: JULY,2019 / 01/03

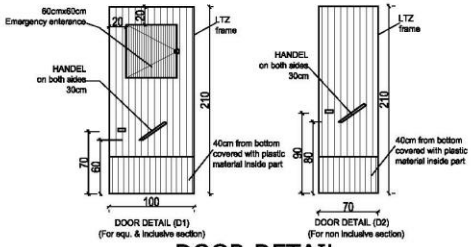


SECTION B-B

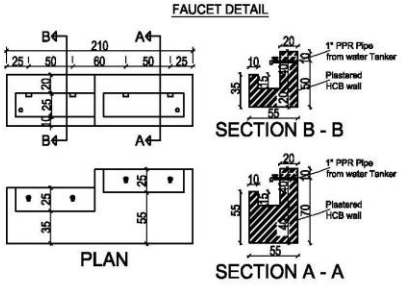


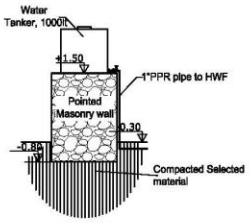
DISABLE SEAT ELEVATION



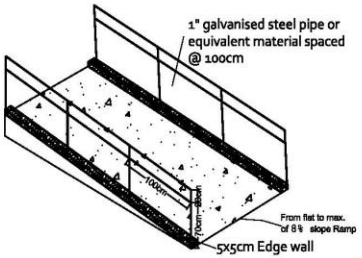


DOOR DETAIL

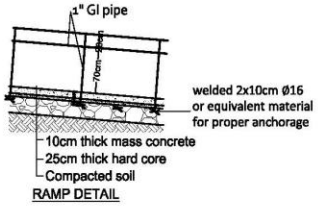




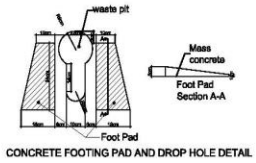
WATER TANKER SECTION



RAMP DETAIL FOR PEOPLE LIVING WITH DISABILITIES

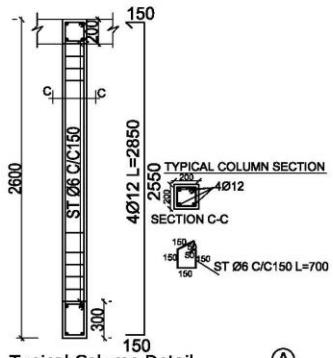


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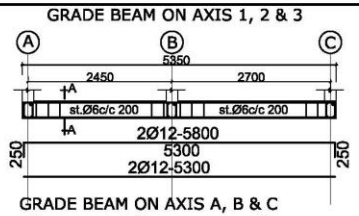


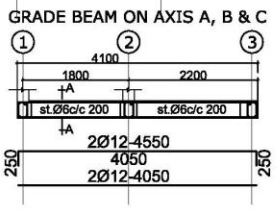
CONCRETE FOOTING PAD AND DROP HOLE DETAIL

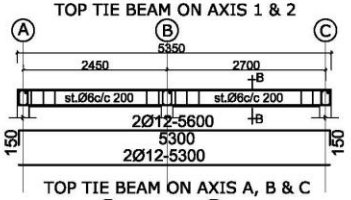
PROJECT: **DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITARY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA**	OWNER: **MINISTRY OF EDUCATION (MoE)**	DESIGNED BY: Mesfin.H PE-634 DRAWING TITLE: 3 SEAT COMPOSTING TYPE DRY PIT LATRINE	CAD BY: Mesfin Habtemariam SCALE: AS SHOWN DATE: JULY,2019 02/03

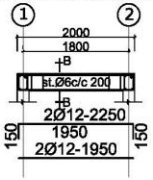


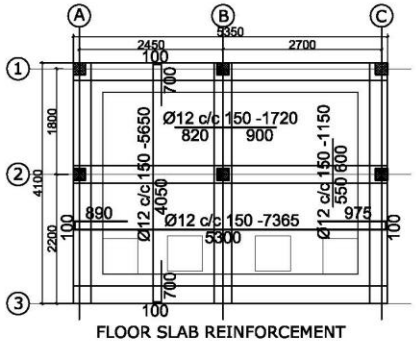
Typical Column Detail



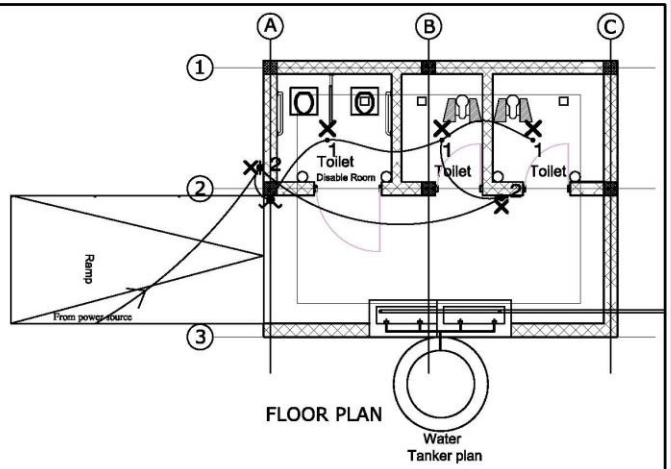








FLOOR SLAB REINFORCEMENT

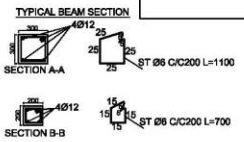


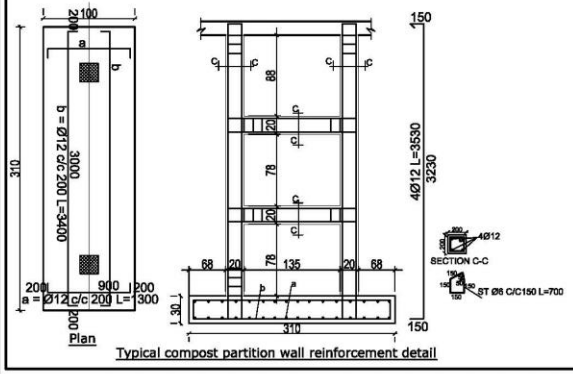
FLOOR PLAN

FITTING No	TYPE OF LIGHT FITTING	LOCATION
1	PHILIPS Tornado 24W E27 6500K	Internal Toilet Rooms
2	PHILIPS outdoor Lorikeets wall lantern LED black 1x3.5W water resistant IP44	External Wall mounted Light

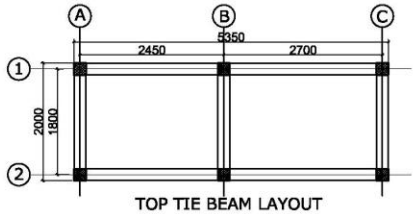
LEGEND

Note





Typical compost partition wall reinforcement detail



TOP TIE BEAM LAYOUT

Notes:

-Concrete Quality shall be C25.

-Structural drawings should be read with Architectural drawings.

-Reinforcement steel quality shall be fyk=300MPa and fyk=400MPa for rebar size less than 12 and greater that 10 respectively.

-Black cotton soil shall be removed entirely & suitable selected material shall be backfilled (compacted in 20cm layers).

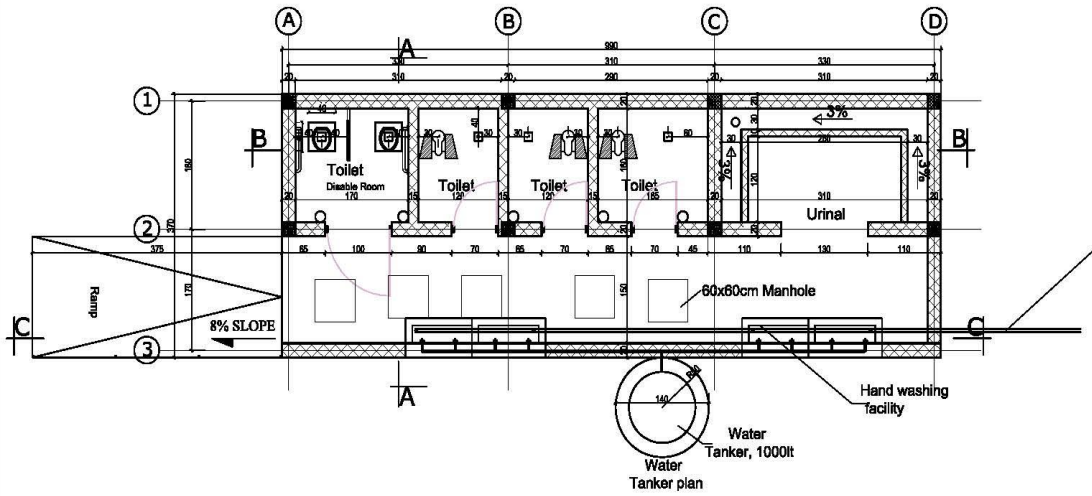
-Hardcore layer of 25cm thickness shall be provided on top of the selected material.

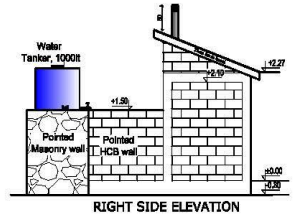
-Concrete cover for Beams and columns shall be 25mm.

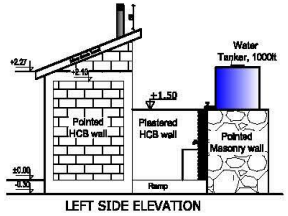
-Concrete cover for Slabs shall be 25mm.

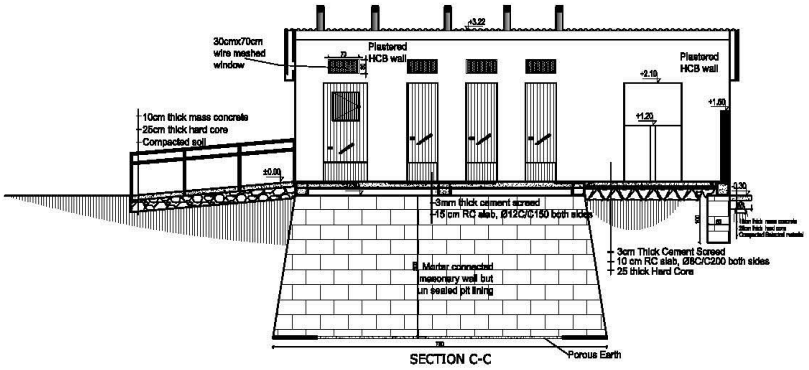
PROJECT	OWNER	DESIGNED BY	CAD BY.
DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITARY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA	MINISTRY OF EDUCATION (MoE)	Mesfin.H PE-634	Mesfin Habtemariam
		DRAWING TITLE: 3 SEAT COMPOSTING TYPE DRY PIT LATRINE	SCALE: AS SHOWN / DATE: JULY,2019 / 03/03

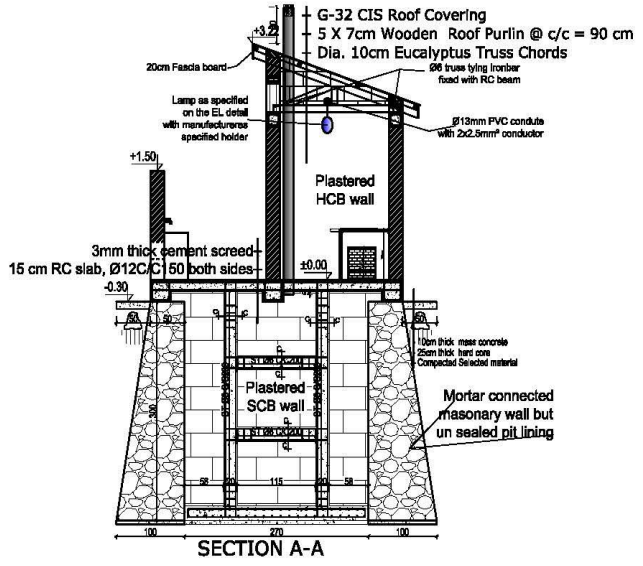
Annex 1.2 Composting Type School Latrine design for Boys (one block with 4 seats) - Three pages



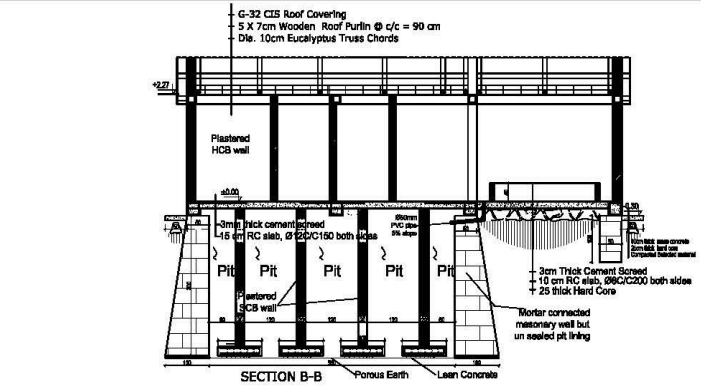




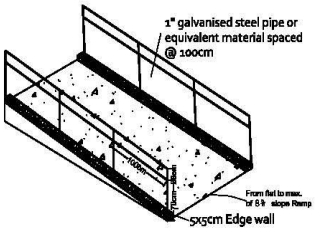




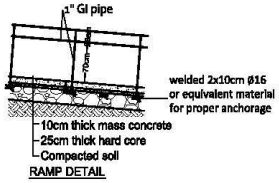
PROJECT **DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITORY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA**	OWNER **MINISTRY OF EDUCATION (MoE)**	DESIGNED BY Lewam Abebe DRAWING TITLE 4 SEAT COMPOSTING TYPE DRY PIT LATRINE FOR BOYS	CAD BY. Mesfin Habtemariam SCALE: AS SHOWN; DATE: JULY,2019; 01/03



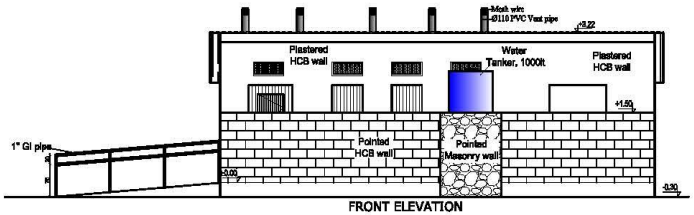
SECTION B-B



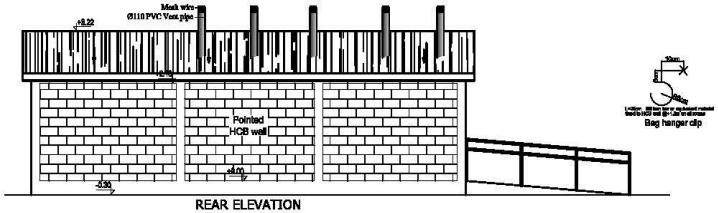
RAMP DETAIL FOR PEOPLE LIVING WITH DISABILITIES



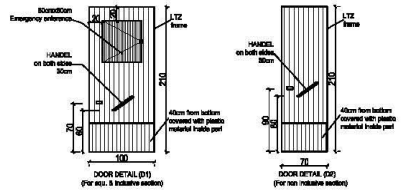
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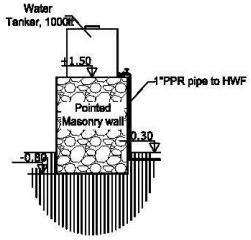


FRONT ELEVATION

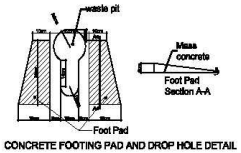


REAR ELEVATION

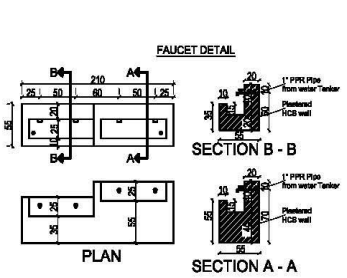


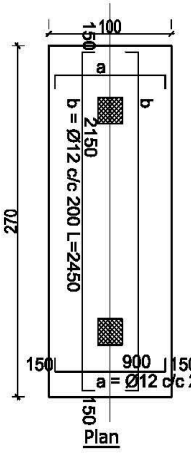


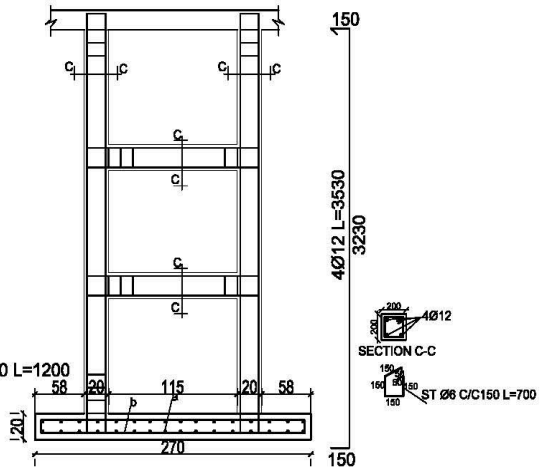
WATER TANKER SECTION



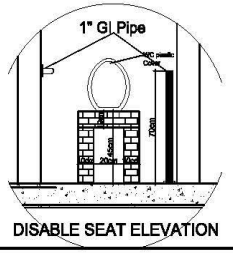
CONCRETE FOOTING PAD AND DROP HOLE DETAIL





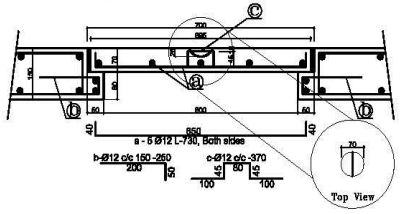


Typical compost partition wall reinforcement detail

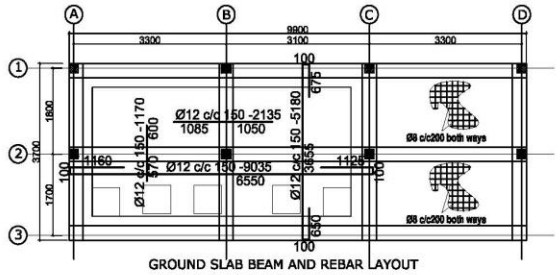


DISABLE SEAT ELEVATION

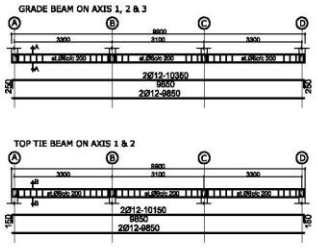
MANHOLE COVER DETAIL

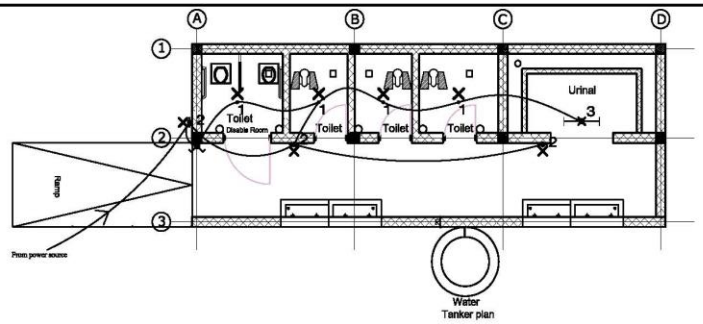


PROJECT **DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITORY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA**	OWNER **MINISTRY OF EDUCATION (MoE)**	DESIGNED BY Lewam Abebe DRAWING TITLE 4 SEAT COMPOSTING TYPE DRY PIT LATRINE FOR BOYS	CAD BY. Mesfin Habtemariam SCALE: AS SHOWN / DATE: JULY,2019 / 02/03



GROUND SLAB BEAM AND REBAR LAYOUT



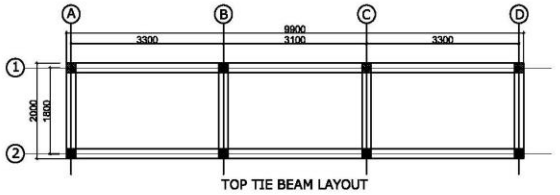


FITTING No	TYPE OF LIGHT FITTING	LOCATION
1	PHILIPS Tornado 24W E27 6500K	Internal Toilet Rooms
2	PHILIPS outdoor Lorikeets wall lantern LED black 1x3.5W water resistant IP44	External Wall mounted Light
3	PHILIPS TCW 215 with 1 x TL-D 360W Lamp	Urinal Room

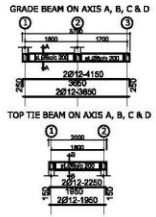


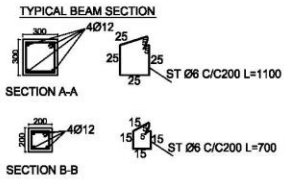
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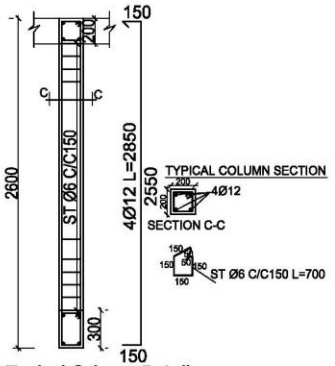
The recommended switch box location is 1.20m - 1.50m from FFL & 15cm from door edge.
Locate switch box 85cm above FFL in Disable room & 15cm from door edge.
All electric wires needs to run through PVC conduits.



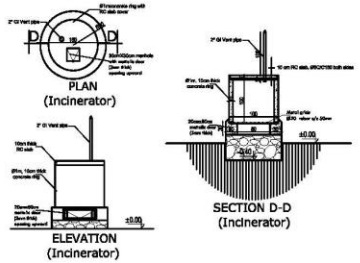
TOP TIE BEAM LAYOUT







Typical Column Detail



Notes:

-Concrete Quality shall be C25.

-Structural drawings should be read with Architectural drawings.

-Reinforcement steel quality shall be fyk=300MPa and fyk=400MPa for rebar size less than 12 and greater that 10 respectively.

-Black cotton soil shall be removed entirely & suitable selected material shall be backfilled (compacted in 20cm layers).

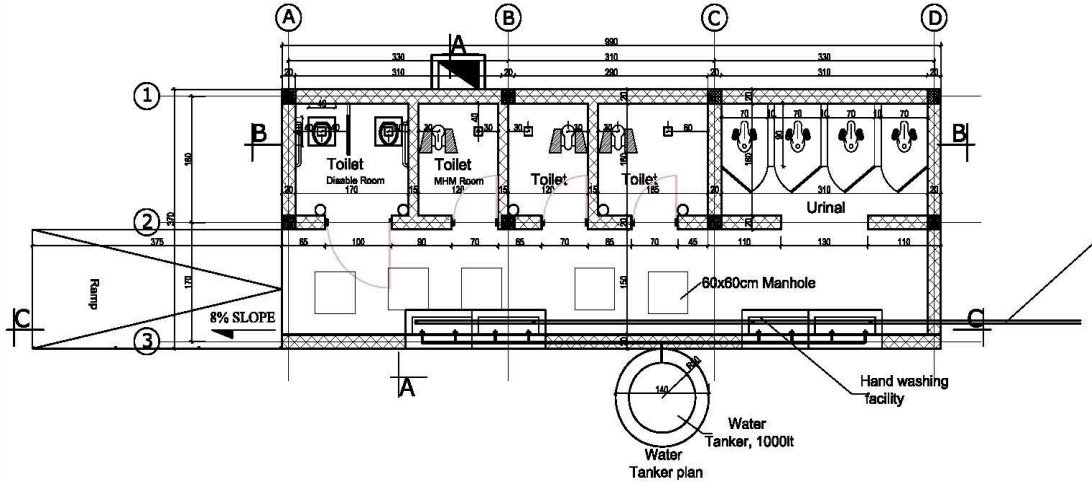
-Hardcore layer of 25cm thickness shall be provided on top of the selected material.

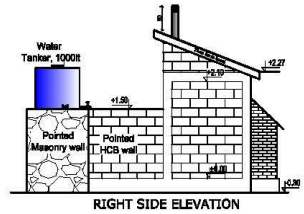
-Concrete cover for Beams and columns shall be 25mm.

-Concrete cover for Slabs shall be 25mm.

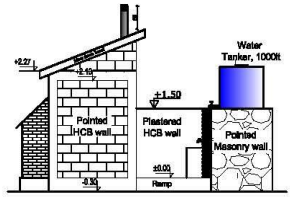
PROJECT	OWNER	DESIGNED BY	CAD BY.
DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITORY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA	**MINISTRY OF EDUCATION (MoE)**	Mesfin.H PE-634	Mesfin Habtemariam
		DRAWING TITLE: 4 SEAT COMPOSTING TYPE DRY PIT LATRINE FOR BOYS	SCALE: AS SHOWN; DATE: JULY,2019; 03/03

Annex 1.3 Composting Type School Latrine design for Girls (one block with 4 seats)- Three pages

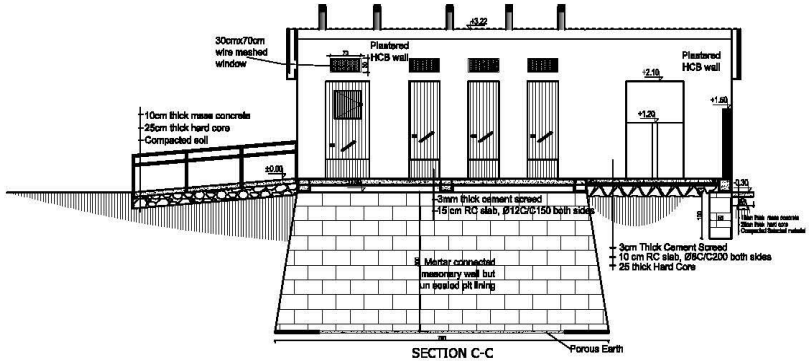




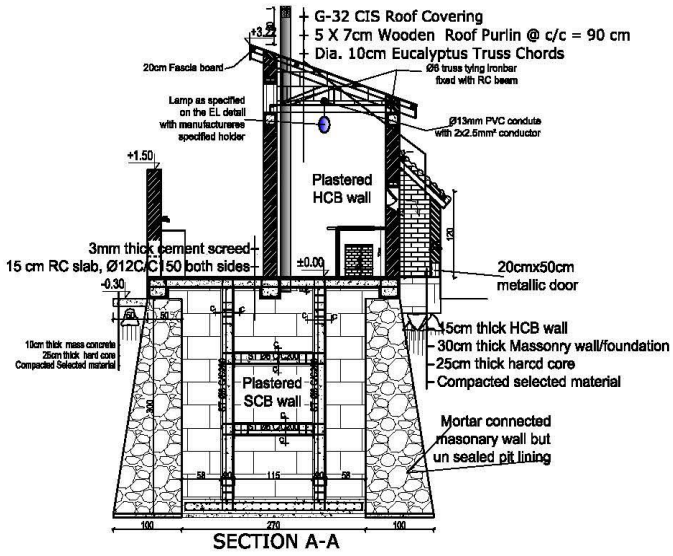
RIGHT SIDE ELEVATION



LEFT SIDE ELEVATION

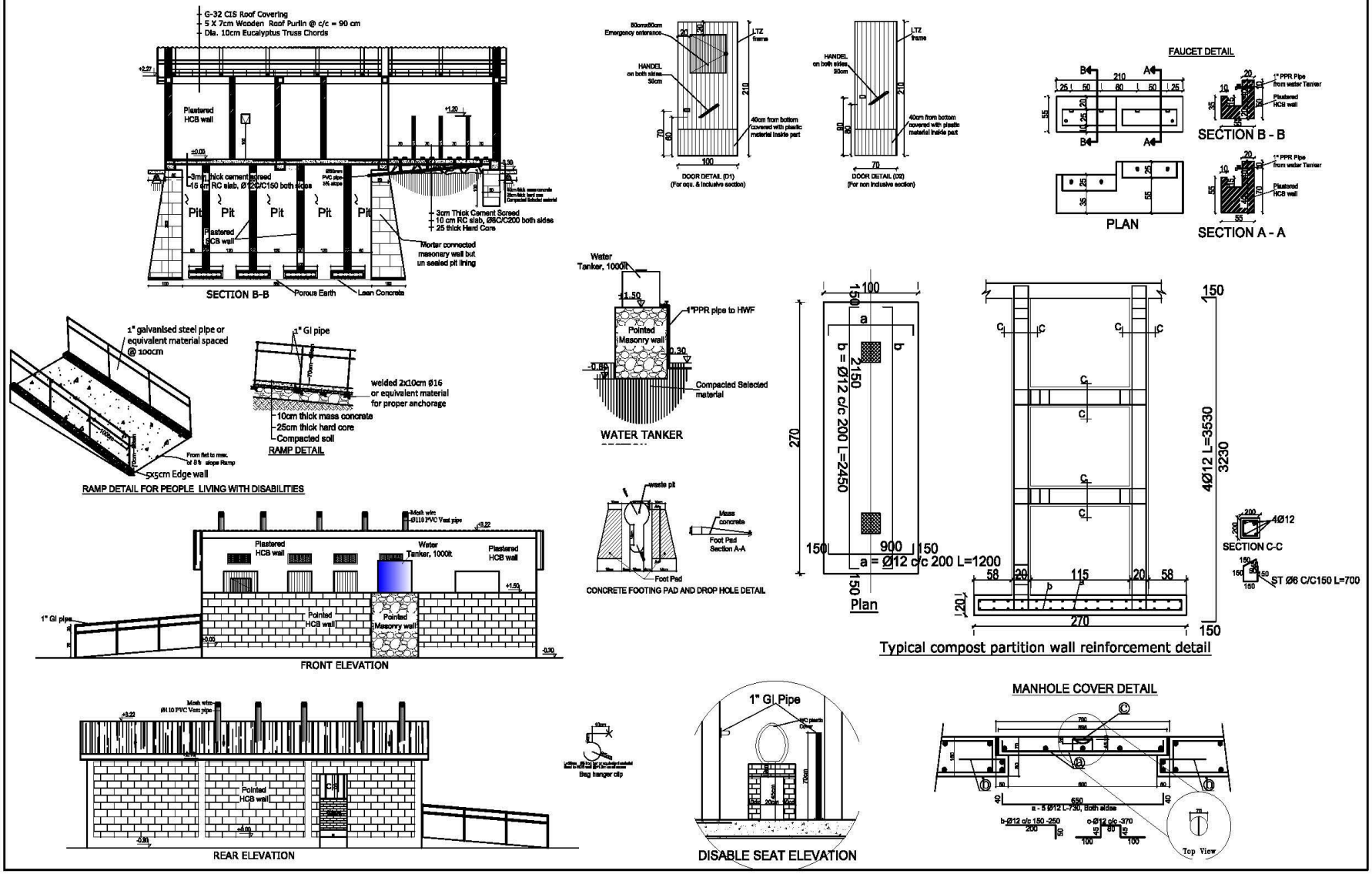


SECTION C-C

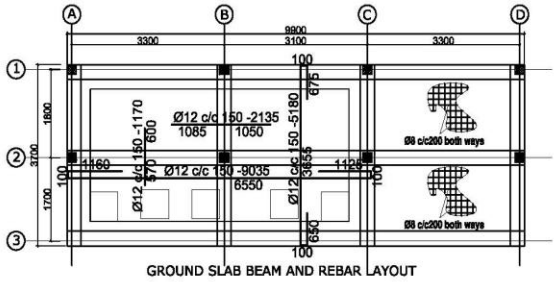


SECTION A-A

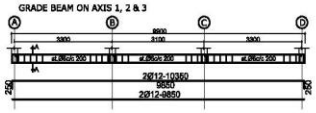
PROJECT **DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITORY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA**	OWNER **MINISTRY OF EDUCATION (MoE)**	DESIGNED BY Lewam Abebe DRAWING TITLE 4 SEAT COMPOSTING TYPE DRY PIT LATRINE FOR GIRLS	CAD BY. Mesfin Habtemariam SCALE: AS SHOWN; DATE: JULY,2019; 01/03

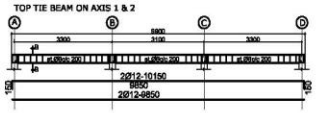


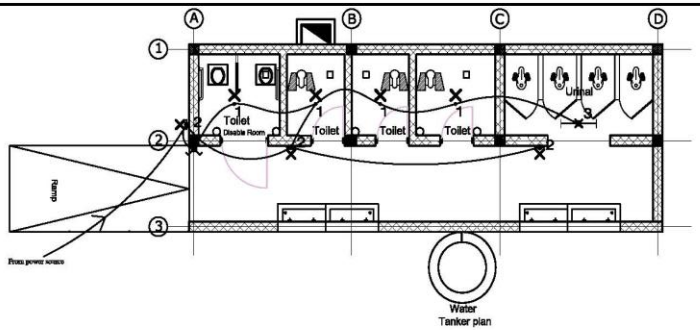
PROJECT **DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITORY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA**	OWNER **MINISTRY OF EDUCATION (MoE)**	DESIGNED BY Lewam Abebe DRAWING TITLE 4 SEAT COMPOSTING TYPE DRY PIT LATRINE FOR GIRLS	CAD BY. Mesfin Habtemariam SCALE: AS SHOWN; DATE: JULY,2019; 02/03



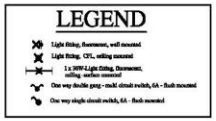
GROUND SLAB BEAM AND REBAR LAYOUT



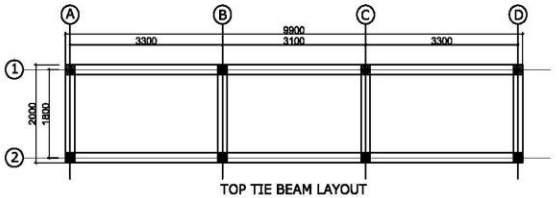




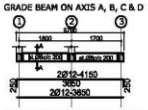
FITTING No	TYPE OF LIGHT FITTING	LOCATION
1	PHILIPS Tornado 24W E27 6500K	Internal Toilet Rooms
2	PHILIPS outdoor Lorikeets wall lantern LED black 1x3.5W water resistant IP44	External Wall mounted Light
3	PHILIPS TCW 215 with 1 x TL-D 360W Lamp	Urinal Room

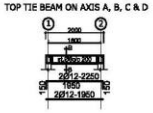


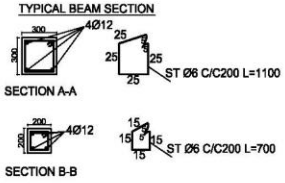
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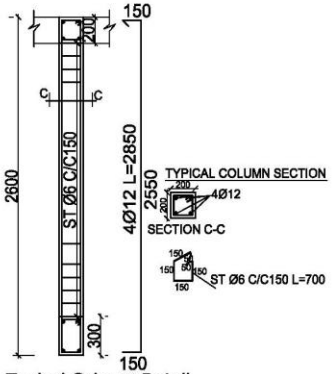


TOP TIE BEAM LAYOUT

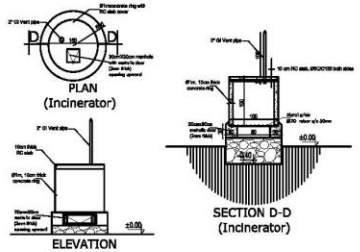








Typical Column Detail



Notes:

-Concrete Quality shall be C25.

-Structural drawings should be read with Architectural drawings.

-Reinforcement steel quality shall be fyk=300MPa and fyk=400MPa for rebar size less than 12 and greater that 10 respectively.

-Black cotton soil shall be removed entirely & suitable selected material shall be backfilled (compacted in 20cm layers).

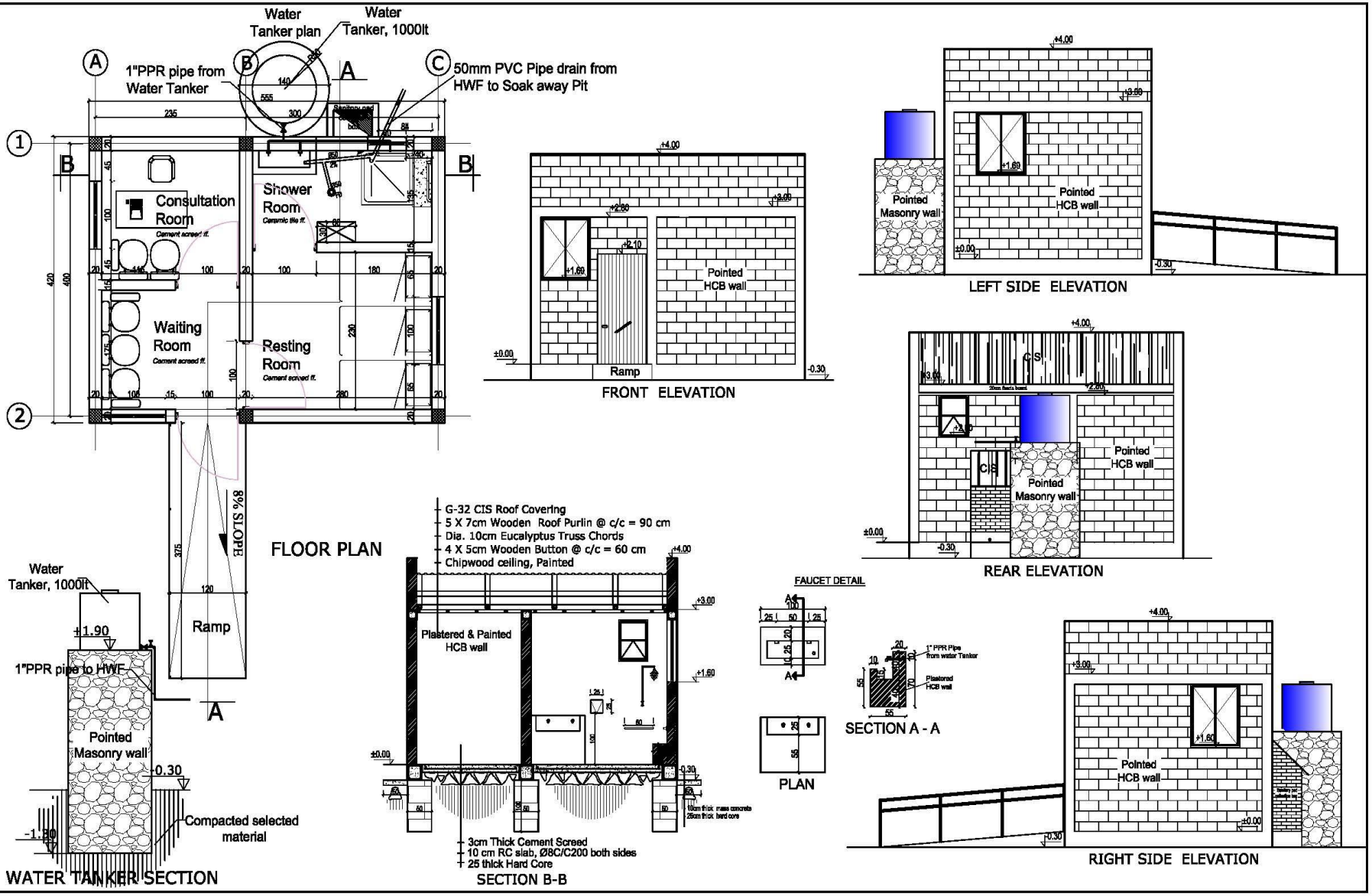
-Hardcore layer of 25cm thickness shall be provided on top of the selected material.

-Concrete cover for Beams and columns shall be 25mm.

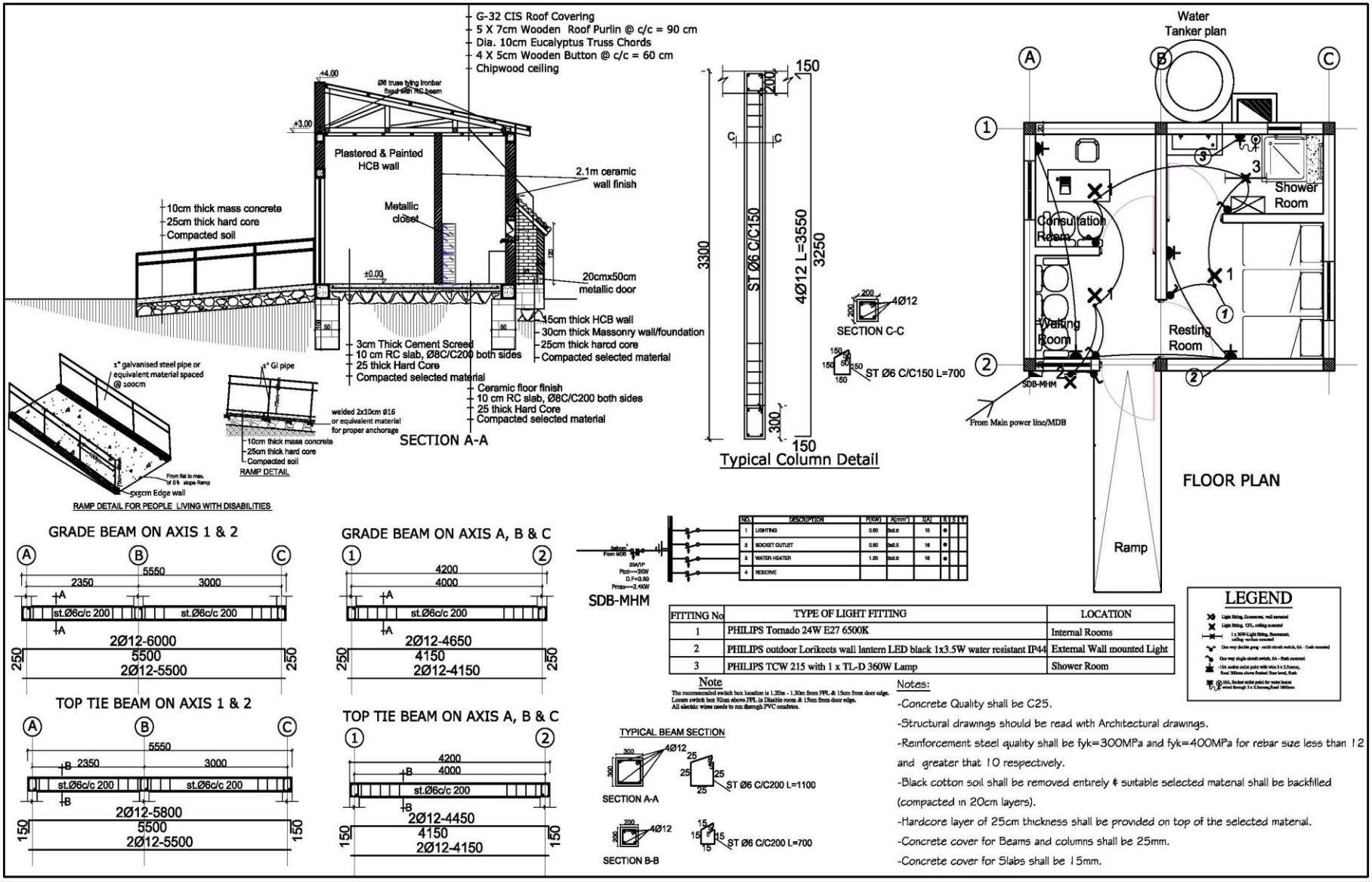
-Concrete cover for Slabs shall be 25mm.

PROJECT	OWNER	DESIGNED BY	CAD BY.
DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITORY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA	**MINISTRY OF EDUCATION (MoE)**	Mesfin.H PE-634	Mesfin Habtemariam
		DRAWING TITLE: 4 SEAT COMPOSTING TYPE DRY PIT LATRINE FOR GIRLS	SCALE: AS SHOWN; DATE: JULY,2019; 03/03

Annex 1.4 Menstrual Hygiene Management (MHM) Room design (a block with 4 rooms) – Two pages



PROJECT **DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITORY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA**	OWNER **MINISTRY OF EDUCATION (MoE)**	DESIGNED BY Mesfin.H PE-634 DRAWING TITLE MENSTRUAL HYGIENE MANAGEMENT (MHM) BLOCK	CAD BY. Mesfin Habtemariam SCALE: AS SHOWN DATE: JULY,2019 AR 01/02



NO.	DESCRIPTION	P(KW)	A(mm²)	I(A)	S	T
1	LIGHTING	0.80	2x2.5	10		
2	SOCKET OUTLET	0.80	2x2.5	16		
3	WATER HEATER	1.20	2x2.5	16		
4	RESERVE					

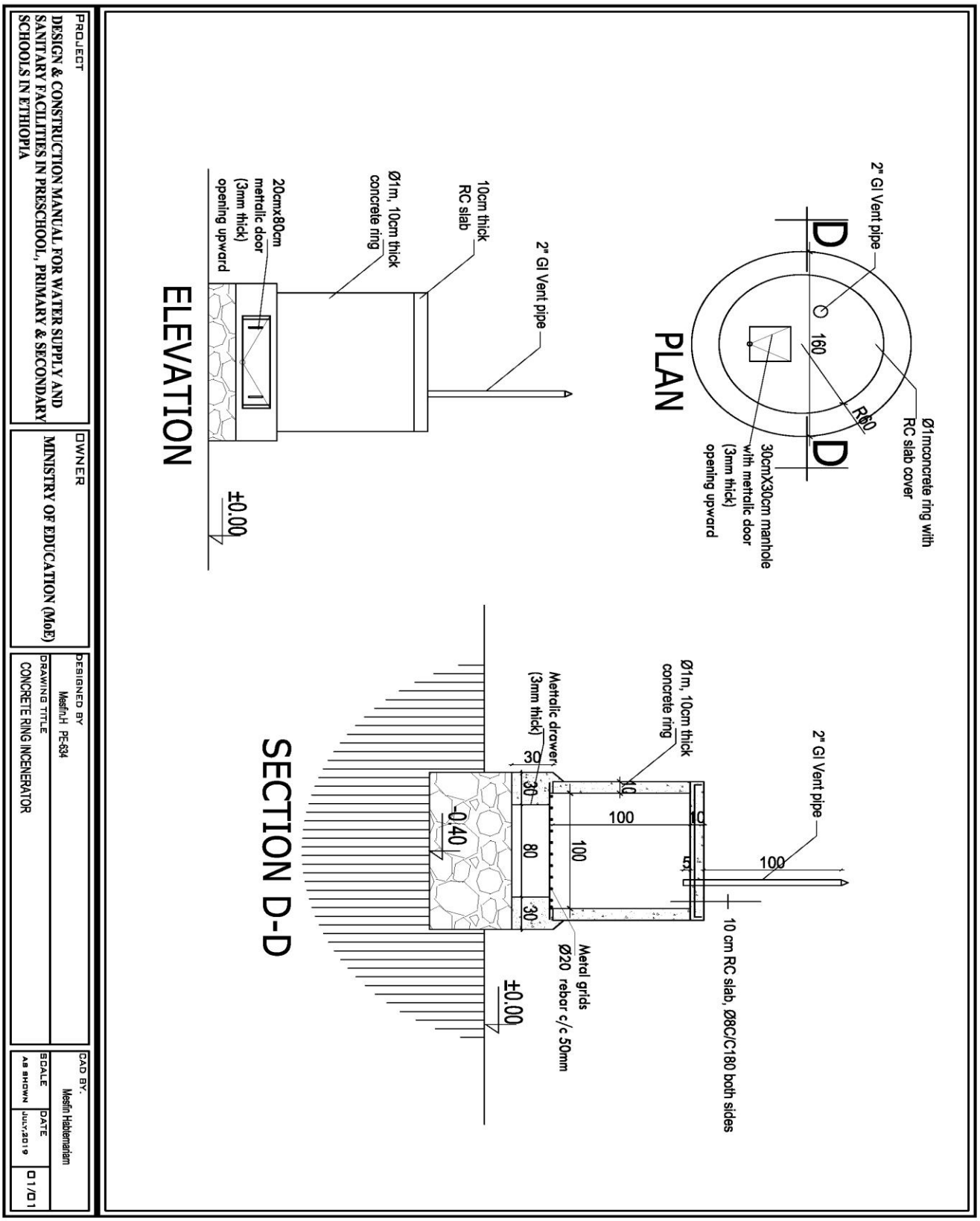
FITTING No	TYPE OF LIGHT FITTING	LOCATION
1	PHILIPS Tornado 24W E27 6500K	Internal Rooms
2	PHILIPS outdoor Lorikeets wall lantern LED black 1x3.5W water resistant IP44	External Wall mounted Light
3	PHILIPS TCW 215 with 1 x TL-D 360W Lamp	Shower Room

Note

The recommended switch box location is 1.20m - 1.30m from FFL & 15cm from door edge. Locate switch box 92cm above FFL in Disable room & 15cm from door edge. All electric wires needs to run through PVC conduites.

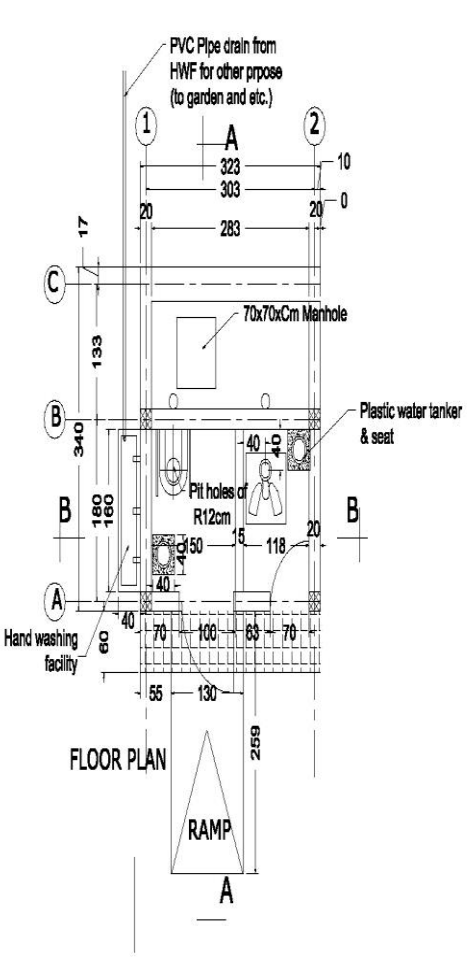
PROJECT	OWNER	DESIGNED BY	CAD BY.	
DESIGN & CONSTRUCTION MANUAL FOR WATER SUPPLY AND SANITORY FACILITIES IN PRESCHOOL, PRIMARY & SECONDARY SCHOOLS IN ETHIOPIA	MINISTRY OF EDUCATION (MoE)	Mesfin.H PE-634	Mesfin Habtemariam	
		DRAWING TITLE	SCALE	DATE
		MENSTRUAL HYGIENE MANAGEMENT (MHM) BLOCK	AS SHOWN	JULY,2019
				AR 02/02

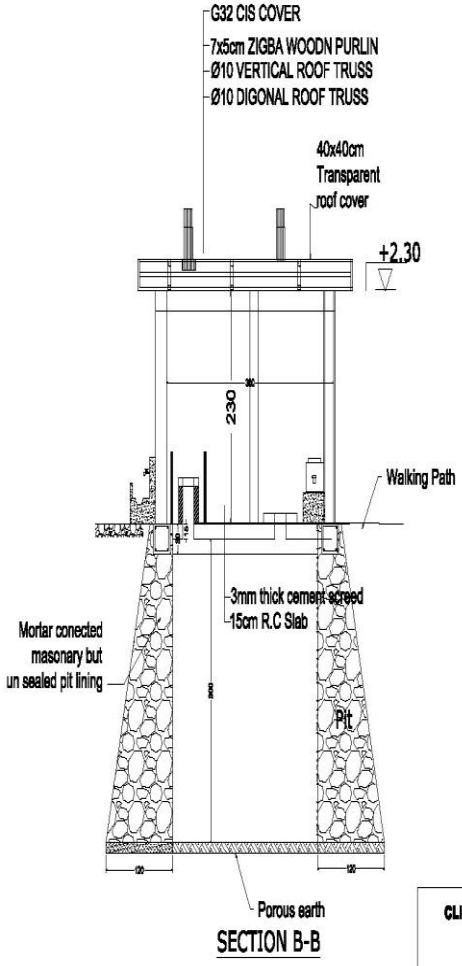
Annex 1.5 Concrete Ring Made Incinerator (Optional) – One page

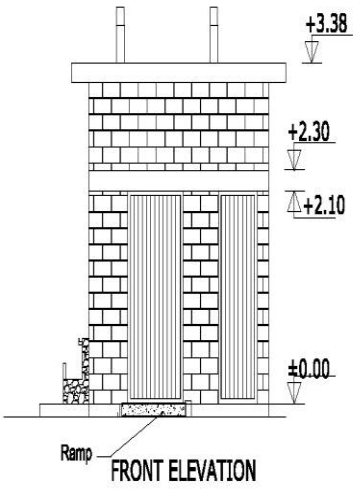


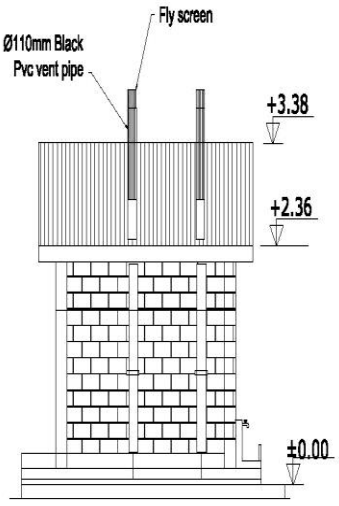
Annex 2. Health facility latrine designs

Annex 2.1 Health post latrine design (one block with 2 seats) - Three pages



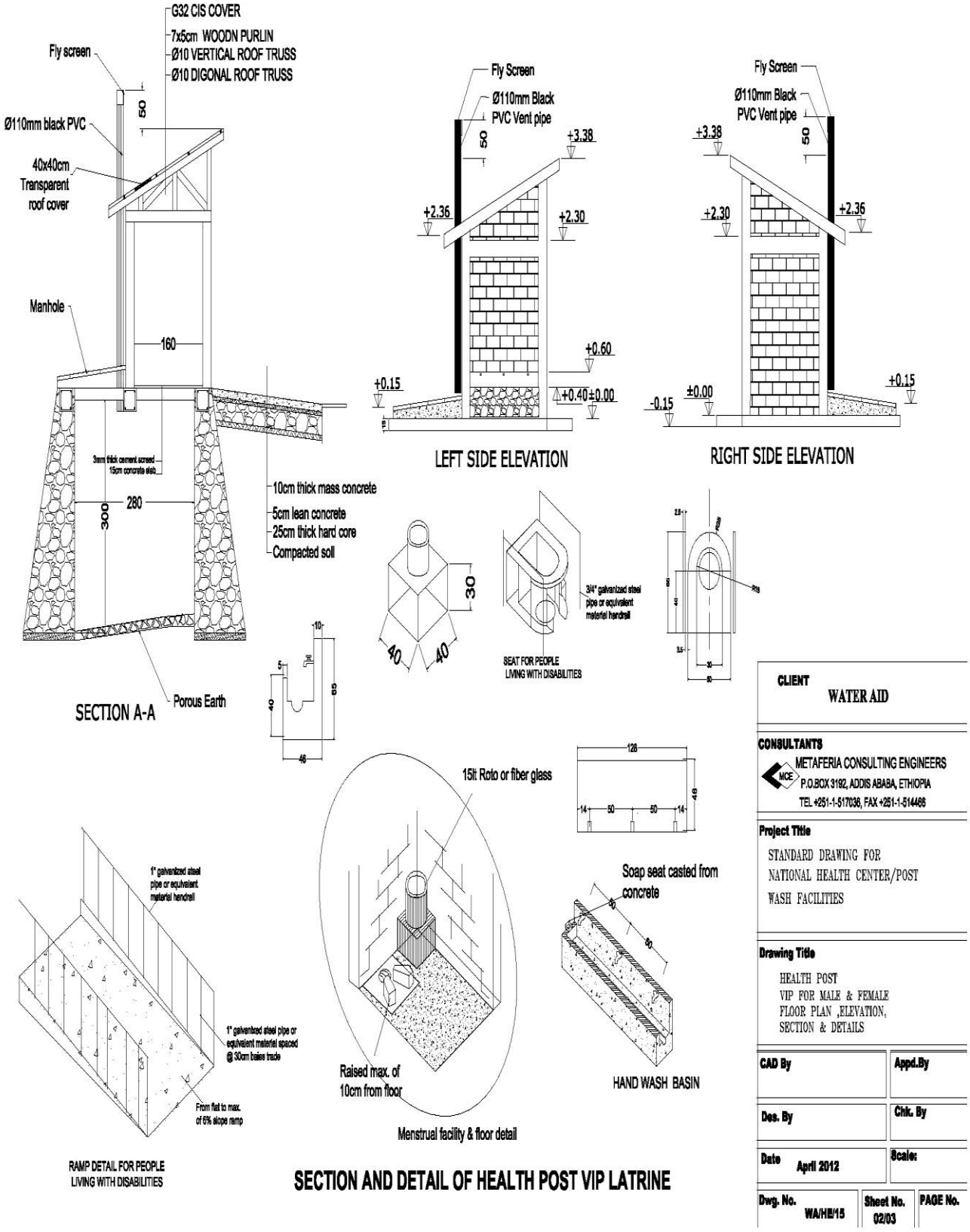


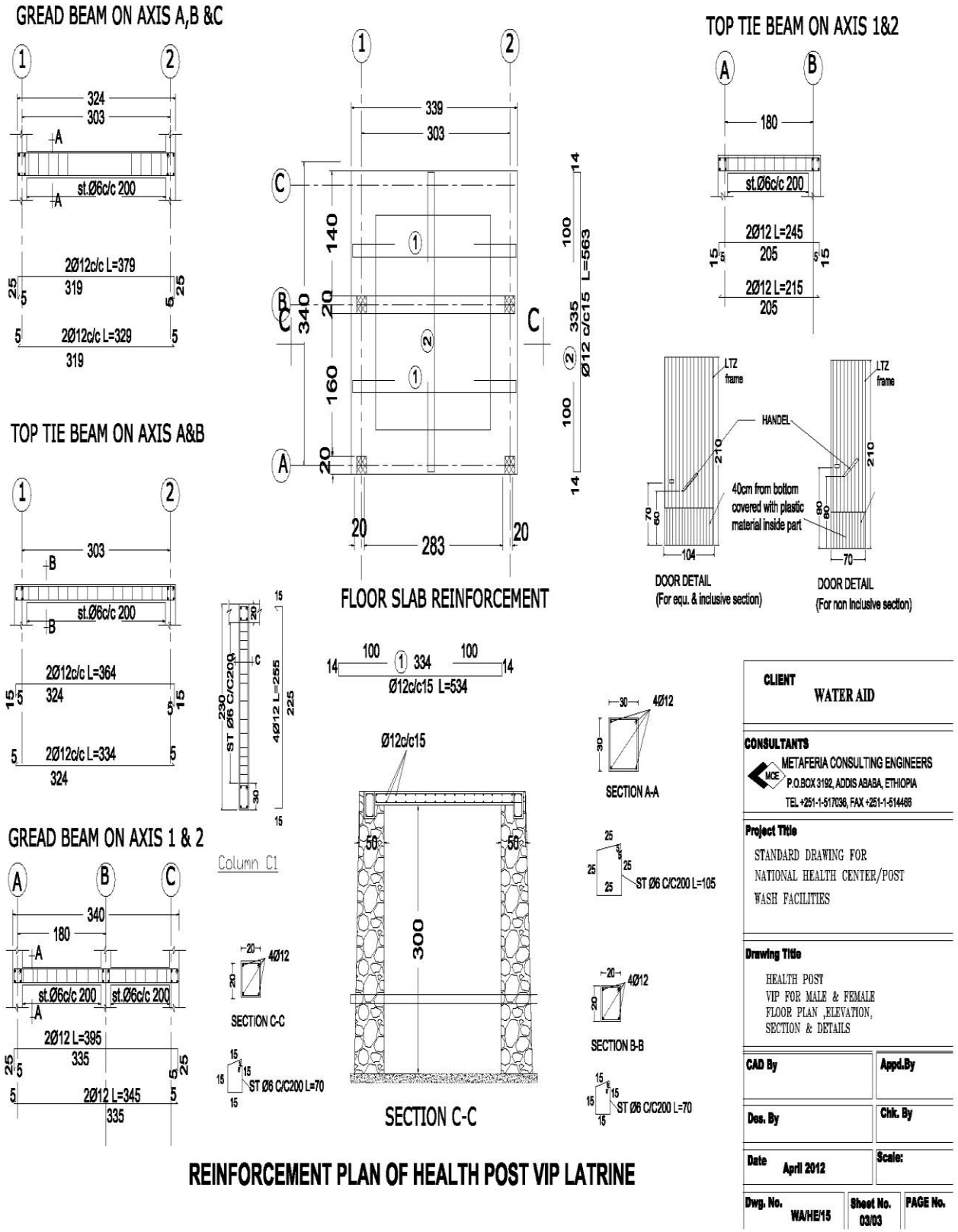




PLAN & SECTION OF HELATH POST VIP LATRINE

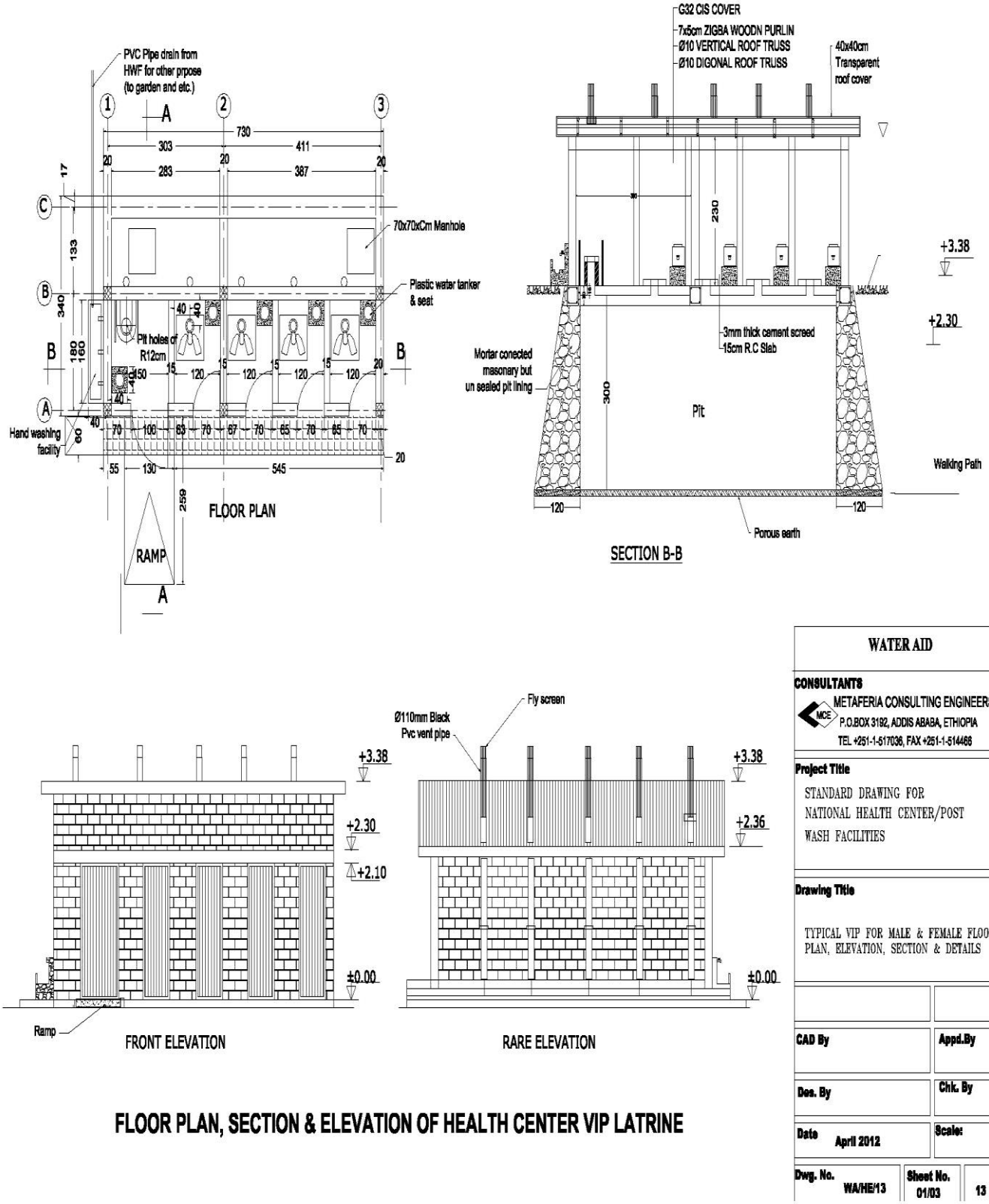
CLIENT	WATER AID
CONSULTANTS	METAFERIA CONSULTING ENGINEERS P.O.BOX 3192, ADDIS ABABA, ETHIOPIA TEL +251-1-517036, FAX +251-1-514466
Project Title	STANDARD DRAWING FOR NATIONAL HEALTH CENTER/POST WASH FACILITIES
Drawing Title	HEALTH POST VIP FOR MALE & FEMALE FLOOR PLAN ,ELEVATION, SECTION & DETAILS
CAD By	**Appd.By**
Des. By	**Chk. By**
Date April 2012	**Scale:**
Dwg. No. WA/HE/15	**Sheet No.** 01/03 — **PAGE No.** 15


G32 CIS COVER
7x5cm WOODN PURLIN
Ø10 VERTICAL ROOF TRUSS
Ø10 DIGONAL ROOF TRUSS
Fly screen
Ø110mm black PVC
40x40cm Transparent roof cover
Manhole
160
50
3mm thick cement screed
15cm concrete slab
280
300
10cm thick mass concrete
5cm lean concrete
25cm thick hard core
Compacted soil
Porous Earth
SECTION A-A
Fly Screen
Ø110mm Black PVC Vent pipe
+3.38
+2.36
+2.30
+0.60
+0.15
+0.40
±0.00
LEFT SIDE ELEVATION
Fly Screen
Ø110mm Black PVC Vent pipe
+3.38
+2.30
+2.36
±0.00
-0.15
+0.15
RIGHT SIDE ELEVATION
30
40
40
3/4" galvanized steel pipe or equivalent material handrail
SEAT FOR PEOPLE LIVING WITH DISABILITIES
10
5
40
65
46
15lt Roto or fiber glass
Raised max. of 10cm from floor
Menstrual facility & floor detail
128
14
50
50
14
40
Soap seat casted from concrete
80
HAND WASH BASIN
1" galvanized steel pipe or equivalent material handrail
1" galvanized steel pipe or equivalent material spaced @ 30cm bases trade
From flat to max. of 6% slope ramp
RAMP DETAIL FOR PEOPLE LIVING WITH DISABILITIES
SECTION AND DETAIL OF HEALTH POST VIP LATRINE
CLIENT
WATER AID
CONSULTANTS
METAFERIA CONSULTING ENGINEERS
P.O.BOX 3192, ADDIS ABABA, ETHIOPIA
TEL +251-1-517036, FAX +251-1-514466
Project Title
STANDARD DRAWING FOR NATIONAL HEALTH CENTER/POST WASH FACILITIES
Drawing Title
HEALTH POST VIP FOR MALE & FEMALE FLOOR PLAN ,ELEVATION, SECTION & DETAILS
CAD By
Appd.By
Des. By
Chk. By
Date
April 2012
Scale:
Dwg. No.
WA/HE/15
Sheet No.
02/03
PAGE No.



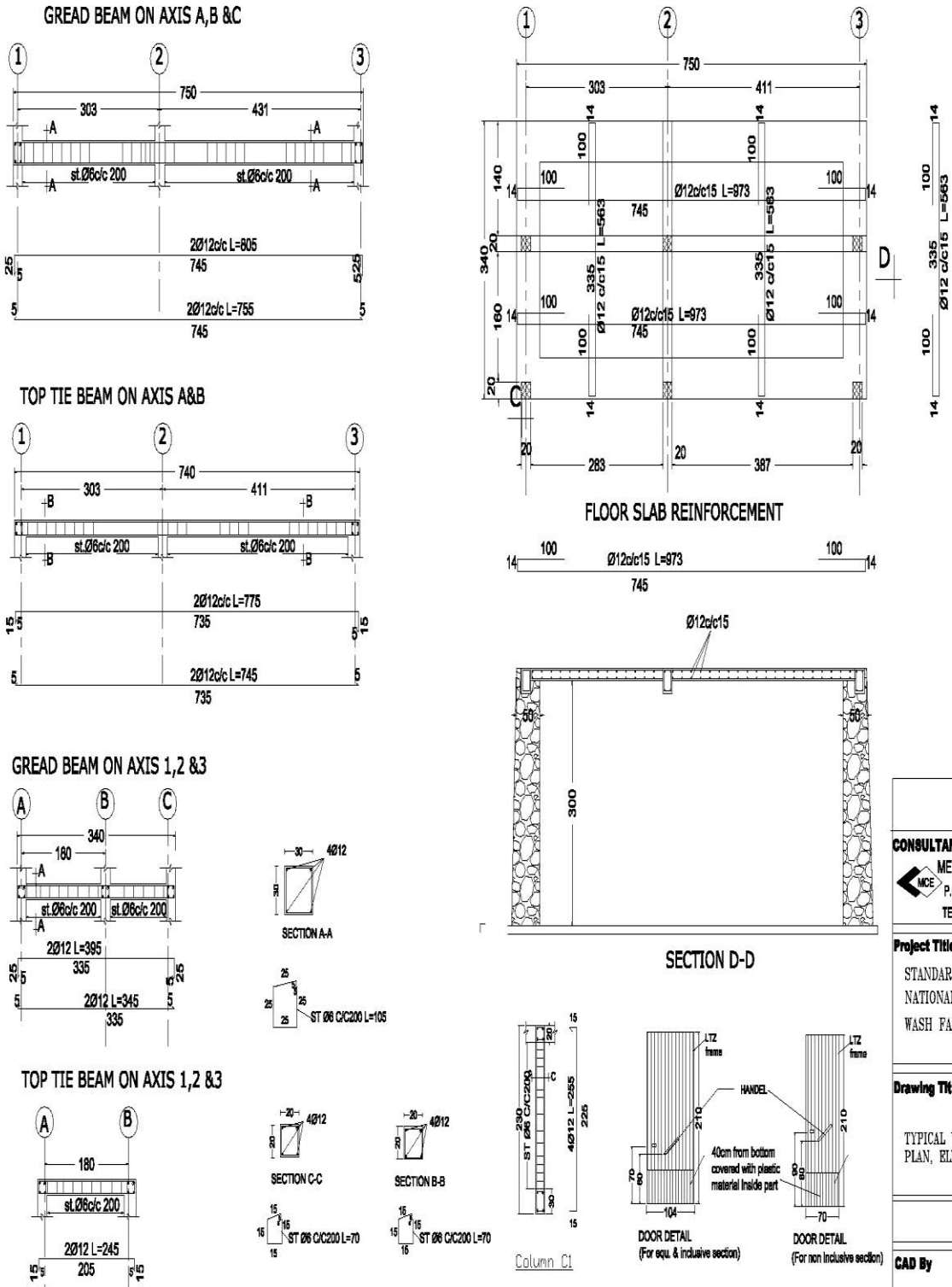
REINFORCEMENT PLAN OF HEALTH POST VIP LATRINE

Annex 2.2 Health centre latrine design (one block with 5 seats) - Three pages



FLOOR PLAN, SECTION & ELEVATION OF HEALTH CENTER VIP LATRINE

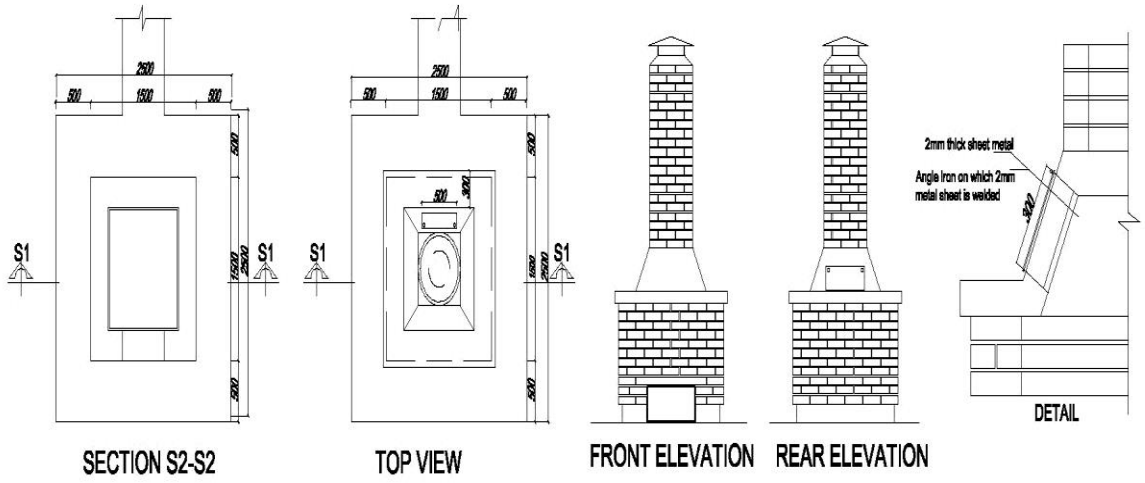
WATER AID	
CONSULTANTS	METAFERIA CONSULTING ENGINEERS P.O.BOX 3192, ADDIS ABABA, ETHIOPIA TEL +251-1-517036, FAX +251-1-514466
Project Title	STANDARD DRAWING FOR NATIONAL HEALTH CENTER/POST WASH FACILITIES
Drawing Title	TYPICAL VIP FOR MALE & FEMALE FLOOR PLAN, ELEVATION, SECTION & DETAILS
CAD By	**Appd.By**
Des. By	**Chk. By**
Date April 2012	**Scale:**
Dwg. No. WA/HE/13	**Sheet No.** 01/03 13



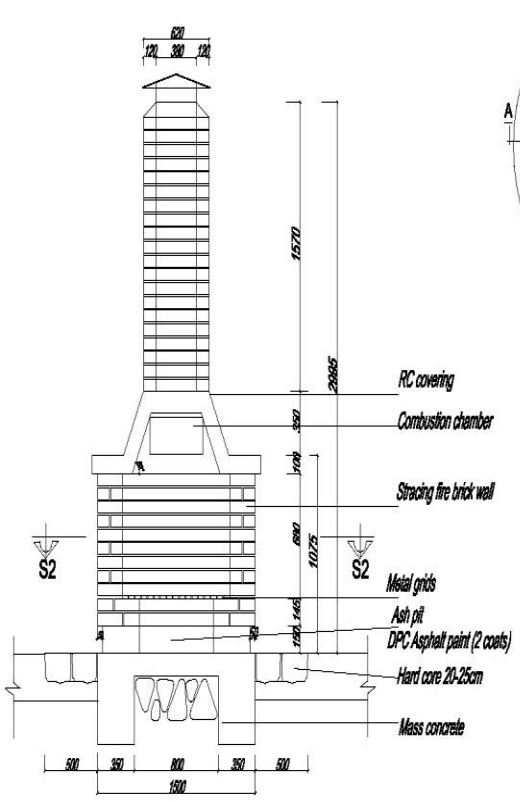
REINFORCEMENT PLAN OF HEALTH CENTER VIP LATRINE

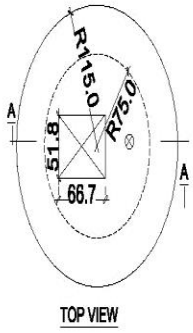
WATER AID	
CONSULTANTS	METAFERIA CONSULTING ENGINEERS P.O.BOX 3192, ADDIS ABABA, ETHIOPIA TEL +251-1-517036, FAX +251-1-514466
Project Title	STANDARD DRAWING FOR NATIONAL HEALTH CENTER/POST WASH FACILITIES
Drawing Title	TYPICAL VIP FOR MALE & FEMALE FLOOR PLAN, ELEVATION, SECTION & DETAILS
CAD By	**Appd.By**
Des. By	**Chk. By**
Date April 2012	**Scale:**
Dwg. No. WA/HE/13	**Sheet No.** 02/03 13

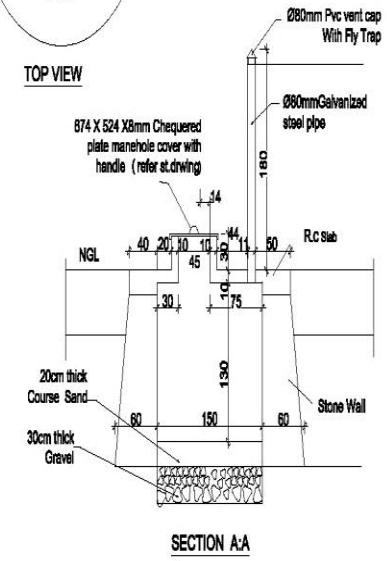
Annex 2.3 Incinerator design & placenta pit designs-1 page



INCINERATOR







Ø150cm Placenta pit

PLAN & SECTION OF INCINERATOR AND PLACENTA PIT FOR HELATH POST AND HEALTH CENTER

WATER AID ETHIOPA	
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Project Title STANDARD DRAWING FOR NATIONAL HEALTH CENTER/POST WASH FACILITIES	
Drawing Title SEPTIC TANK, INCENERATOR & PLACENTA PIT	
CAD By	Appd.By
Des. By	Chk. By
Date April 2012	Scale:
Dwg. No. WA/HE/20	Sheet No. 01/01 / Page No.

Annex 3. Bill of Quantity for School Latrines

Annex 3.1 Bill of Quantity for Dry pit VIP Latrine for Teachers/Staff at School (one block with 3 seats)

I.N.	Description	Unit	Qty.	Unit price	Total Price
	A. SUB-STRUCTURE				
	1.EXCAVATION & EARTHWORKS				
1.1	Clear the site to remove top soil to an average depth of 20cm	m^2	77		
1.2	Bulk excavation of ordinary soil type for latrine to a depth not exceeding 400cm from reduced ground level	m^3	82		
1.3	Bulk excavation of rocky soil type for latrine to a depth exceeding 400cm from RGL	m^3	20		
1.4	Backfill around masonry wall & pavement with selected and non expansive material up to a required level and well consolidated in layers not exceeding 20cm thick	m^3	10		
1.5	Load and cart away surplus excavated material and deposited at an appropriate place not less than 1 km out side the site as approved by the Engineer	m^3	132		
1.6	Lay and compact 250 mm thick hard basaltic or equivalent stone hardcore, finished and blinded with crushed stone under Ramp & Pavement or as per the drawing	m^2	16		
	Sub Total				
	2.CONCRETE WORKS				
2.1	Lay 5cm thick lean concrete in C-5 with minimum cement content of 150kg/m^3				
	a) Under masonry foundation wall	m^2	21		
	b) Under foundation pads	m^2	10		
	c) Above hardcore of ramps	m^2	28		
2.2	Cast Reinforced concrete in class C-25 (with a 28-day 150mm cube crushing strength of 25MPa) and maximum aggregate size of 30mm cast into formworks and vibrated around rod reinforcement bars.(formwork & reinforcement bars are measured separately) in:				
	a) Grade beam (30cm x 30cm)	m^3	4		
	b) 15cm thick floor slab, Provide openings for vent pipes, squat hole, urine disposal pipe and manhole's as per the drawing. When finished the manhole cover should have lever with the rest of floor.	m^3	6		
	c) 10cm thick mass concrete for ramps as per the drawing and instruction from the supervisor.	m^3	1		
2.3	Provide, cut and fix in position sawn zigba wood formwork or equivalent for;				
	a) Grade beam	m^2	17		
	b) 15cm thick floor slab	m^2	27		
	c) Footing	m^2			
2.4	Cost to supply, cut and fix Reinforcement steel bars according to structural drawing. Price includes cutting, bending, placing in position and tying wires.				
	a) dia. 6mm plain bar	kg	49		
	b) dia. 8mm deformed bar	kg			
	c) dia. 12 mm deformed bar	kg	229		
	Sub Total				

Annex 3.1 Bill of Quantity for Dry pit VIP Latrine for Teachers/Staff at School (one block with 3 seats) - Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
	3. Masonry and Block works				
3.1	Construct 40cm -120cm thick, roughly dressed hard trachytic or equivalent stone masonry wall bedded in cement sand mortar mix of 1:3 as specified in the drawing. The price includes Pointing for exposed surfaces or as directed by the engineer.	m^3	49		
3.2	Supply and construct partition walls made of 20cm thick concrete solid blocks. The solid blocks should be placed very carefully and jointed with the frame to prevent leak of liquids in cement sand mortar mix (1:3).	m^3	21		
	Sub Total				
	B. SUPER-STRUCTURE				
	1. CONCRETE WORKS				
1.1	Cast Reinforced concrete in class C-25 (with a 28-day 150mm cube crushing strength of 25MPa) and maximum aggregate size of 30mm cast into formworks and vibrated around rod reinforcement bars.(formwork & reinforcement bars are measured separately) in:				
	a) In elevation columns (20cm x 20cm)	m^3	1		
	b) In top tie beam (20cmx20cm)	m^3	1		
1.2	Provide, cut and fix in position sawn zigba wood formwork or equivalent for columns and top tie beams				
	a) In elevation columns	m^2	16		
	b) In top tie beams	m^2	18		
1.3	Cost to cut and fix Steel reinforcement steel bars according to structural drawing. Price includes cutting, bending, placing in position and tying wires.				
	a) dia. 6mm plane bar	kg	45		
	b) dia. 6mm plane bar	Kg			
	c) dia. 12 mm deformed bar	kg	57		
	Sub total				
	2. BLOCK WORKS				
2.1	20cm thick hollow concrete block (class C) wall bedded in cement mortar 1:3 internal and external walls left for plastering. The quality has to be approved by the client prior to supply of HCB.	m^2	36		
2.2	Ditto but 15cm thick HCB wall (class C), The quality has to be approved by the client prior to supply of HCB.	m^2	18		
	Sub Total				
	3. ROOFING				
3.1	Supply and fix G-32 galvanized corrugated steel sheet roofing fixed to 5x7 cm purlins at c/c 90 cm. Horizontal projection of roof area shall be taken for measurement.	m^2	42		
3.2	Truss members of eucalyptus shall be well seasoned, straight and free of harmful defects. Each truss joint and members shall be firmly connected with strips of band iron. Price shall include approved 2 coats of anti termite paint to truss and purlins. Truss should be fixed with the top tie beam with Ø6 rebar and spaced at 120cm from each other.				

Annex 3.1 Bill of Quantity for Dry pit VIP Latrine for Teachers/Staff at School (one block with 3 seats) - Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
	a) Ø 10 cm or above eucalyptus upper and lower members	ml	62		
	b) Ø 8 cm or above eucalyptus bracing and internal members.	m	20		
	c) 5x7 cm zigba purlins , Price includes anti termite treatment	ml	37		
3.3	Supply and fix 20x2.5cm kerero or equivalent fascia board including 3 coats of weather resistant paint.	ml	36		
3.4	Supply and fix 18cmx18cmx12cm gutter made of G-28 sheet metal. Provide at least 0.2% slope towards the out let and connect the gutter in position using clamp and gutter support at 1m spacing. The work includes fixing the gutter on position with binding wire, fixing the wire mesh over the gutter and all necessary works thereto. Price shall include one coat anti rust and two coats synthetic paint. (Optional)	ml	-		
3.5	Supply and fix Ø 110mm PVC down pipe and connect the down pipe to the water tanker. Cost includes all necessary works including fixing it with the wall, providing elbow, clamps, fischers and any other works required thereto. (Optional)	ml	-		
	Sub total				
	4. METAL WORKS				
	All metal doors and windows shall be fabricated from locally manufactured frame 1.25mm thick LTZ 38mm width, pressed metal with the necessary iron mongory, accessories and three coats of paint. The doors must be fixed with simple lock inside and outside. Price includes one coat anti rust and two coats synthetic paint internally and externally. It also includes provision of 40cm plastic cover at the bottom of each door.				
4.1	Ditto but 70x30 window with weir mesh and metallic frame as shown on the drawing	No	3		
4.2	Ditto but 100x210 (100cm is clear opening). Opening of this door is as shown on the drawing and has emergency door exit for disabilities latrine as shown on the drawing	No	1		
4.3	Ditto but 70x210 (70cm is clear opening). Opening of this door is as shown on the drawing.	No	2		
	Sub total				
	5. FINISHING				
	Cost for Finishing works which shall include all surface pre-cleaning. Preparation and application of finishing and cleaning at the end of finishing works				
5.1	Three coats of plastering in cement sand mortar of ratio 1:3 to HCB walls reinforced concrete beams & columns as per the drawing	m^2	59		
5.2	Pointing to HCB wall and exposed masonry walls in cement sand mortar of ratio 1:3 as per the drawing	m^2	35		
5.3	30 mm thick cement screed floor finishing in cement sand mortar of 1:3	m^2	38		
5.4	Construct Pavement made of masonry as shown in the drawing. The price includes drainage and Pointing of exposed parts.	m^2	10		
5.5	Install 110mm PVC vent pipe as per the drawing. The price includes providing opening hole in the CIS for passage, minimum two bracket support with HCB wall and fixing PVC with truss support & Truss.	Pcs	6		
5.6	Provide trough Boys urinal made of HCB. The HCB and the floor should be plastered with smooth finish. Cost includes all works including provision of Ø50mm PVC pipe connected to the pit latrine as per the detail of the drawing and supervisors recommendation.	Ls.	-		

Annex 3.1 Bill of Quantity for Dry pit VIP Latrine for Teachers/Staff at School (one block with 3 seats) - Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
5.7	Supply and install seat for disable as per the drawing. The seat should be suitable for using and smooth. The price includes 1" GS pipe for handrail.	Ls.	1		
5.8	Supply and install hand rail for ramp made of 1" GS pipe with bracers as shown in the drawing & direction by supervisor. The price includes all the necessary works for embedding the hand rail on the ramp & provision of materials thereto.	No	2		
5.9	Supply and Install 1000lt water tanker as shown in the drawing to be seat on a masonry platform. Cost includes the construction of masonry water tanker seat pointed to a good finish, pipe laying, supply and connect all necessary fittings as shown in the drawing.	Ls	1		
5.10	Supply and construct handwash basin connected to the latrine wall as shown on the drawing. Price includes 1/2" faucet, Ø50mm drainage PVC pipe connected to soak away pit, 1" PPR pipe connected from elevated tankers. The soak away pit located a minimum of 10m away from the latrine.	Ls	1		
5.11	Provide incinerator for disposal of wastes as per the drawing. Cost includes earth works, foundation works, masonry works, cylindrical concrete, piped chimney, 10cm thick RC slab, metal grids and ash disposal metallic door. (Optional)	No	1		
5.12	Provide Soak away pit as per the drawing (1.4x1.4x1.5m) filled with crushed gravel at a minimum distance of 10m from the latrine. The soak away is constructed in such away to accommodate with the slope of the drain pipe of hand washing facilities.	Ls.	1		
5.13	Apply wall paint to plastered external beams and columns surfaces	m^2	59		
5.14	Construct concrete Pavement as shown in the drawing. The price includes casting 10cm concrete, formwork, Steps construction, Chip wood expansion joint @2m C/C and Pointing on exposed parts.	m^2	5		
5.15	Provide Ramp with minimum size as shown in the drawing for easy accessing of Toilets. The price includes all necessary masonry works, hardcore, hand rail, Concrete top and Plastering on sides of wall.	pcs	1		
5.16	Provide ceramic squat for the drop holes with size of 45cm by 60cm or as approved by the engineer. The price includes all necessary concrete works and all other necessary works there to. (This is for Latrines to be used for Classes under 4^{th} grade). Optional to #5.17	pcs	2		
5.17	Provide foot rest made of concrete as specified on the drawing. The price includes all necessary works there to. (This is for Latrines to be used for Classes above 4^{th} grade). Optional to # 5.16	pcs	2		
	Sub total				
	6. ELECTRICAL INSTALLATION (OPTIONAL)				
	Supply and install: -				
6.1	Light Points				
	Flush mounted light points fed through PVC insulated conductors of 2x2.5mm^2 inside PVC conduits of 13mm diameter, including junction boxes with covers and insulating screw cap connectors, complete	No	3		

Annex 3.1 Bill of Quantity for Dry pit VIP Latrine for Teachers/Staff at School (one block with 3 seats) - Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
6.2	Flush Mounted Switches (Type Legrand Suno or Equivalent)				
	Flush mounting single switch, 6A - flush mounted	No			
	Flush mounting One-way double gang - multi circuit switch, 6A - flush mounted	No	1		
	Flush mounting Two way switch, 6A - flush mounted	No			
6.3	Light Fittings and Lamps				
	(Specified Type or Equivalent				
	Connected and tested including lamps and accessories complete, all as specified or described in lighting fittings schedule and as shown on the drawings.				
6.3.1	PHILIPS Tornado 24W E27 6500K or Equivalent	No	3		
6.3.2	PHILIPS outdoor Lorikeets wall lantern LED black 1x3.5W water resistant IP44 or Equivalent	No	2		
6.3.3	PHILIPS TCW 215 with 1 x TL-D 360W Lamp or Equivalent	No	-		
6.4	Connect the power for Latrine light points fed through PVC insulated conductors of 2x2.5mm$_2$ inside PVC conduits of 13mm diameter to the School facility power source/Braker. Line will be supported by 2" GI Steel with concrete foundation @5m Spacing or as approved by the engineer. It also including all other supports as required. The Line path will be as approved layout. (optional to #6.5)	Ls	1		
6.5	Connect the power for Latrine light points fed through PVC insulated conductors of 2x2.5mm2 inside PVC conduits of 13mm diameter to the School facility power source/Breaker. The price includes trench excavation and selected backfilling work to burry/lay electric conduit to a minimum depth of 70cm below Ground level. The price includes placing warning tape 30cm below the Ground level and 50mm diameter PVC pipe at 70cm below the Ground level along the trench line. The Line path will be as approved layout. (optional to #6.4)	Ls	1		
	Sub total				
	Grand total				

Annex 3.2 Bill of Quantity for Dry pit VIP Latrine for Boys at School (one block with 4 seats)

I.N.	Description	Unit	Qty.	Unit price	Total Price
	A. SUB-STRUCTURE				
	1.EXCAVATION & EARTHWORKS				
1.1	Clear the site to remove top soil to an average depth of 20cm	m^2	78		
1.2	Bulk excavation of ordinary soil type for latrine to a depth not exceeding 400cm from reduced ground level	m^3	109		
1.3	Bulk excavation of rocky soil type for latrine to a depth exceeding 400cm from RGL	m^3	27		
1.4	Backfill around masonry wall & pavement with selected and non expansive material up to a required level and well consolidated in layers not exceeding 20cm thick	m^3	15		
1.5	Load and cart away surplus excavated material and deposited at an appropriate place not less than 1 km out side the site as approved by the Engineer	m^3	176		
1.6	Lay and compact 250 mm thick hard basaltic or equivalent stone hardcore, finished and blinded with crushed stone under Ramp & Pavement or as per the drawing	m^2	21		
	Sub Total				
	2.CONCRETE WORKS				
2.1	Lay 5cm thick lean concrete in C-5 with minimum cement content of 150kg/m^3				
	a) Under masonry foundation wall	m^2	21		
	b) Under foundation pads	m^2	10		
	c) Above hardcore of ramps	m^2	28		
2.2	Cast Reinforced concrete in class C-25 (with a 28-day 150mm cube crushing strength of 25MPa) and maximum aggregate size of 30mm cast into formworks and vibrated around rod reinforcement bars.(formwork & reinforcement bars are measured separately) in:				
	a) Grade beam (30cm x 30cm)	m^3	4		
	b) 15cm thick floor slab, Provide openings for vent pipes, squat hole, urine disposal pipe and manhole's as per the drawing. When finished the manhole cover should have lever with the rest of floor.	m^3	8		
	c) 10cm thick mass concrete for ramps as per the drawing and instruction from the supervisor.	m^3	1		
2.3	Provide, cut and fix in position sawn zigba wood formwork or equivalent for;				
	a) Grade beam	m^2	23		
	b) 15cm thick floor slab	m^2	32		
	c) Footing	m^2			
2.4	Cost to supply, cut and fix Reinforcement steel bars according to structural drawing. Price includes cutting, bending, placing in position and tying wires.				
	a) dia. 6mm plain bar	kg	64		
	b) dia. 8mm deformed bar	kg			
	c) dia. 12 mm deformed bar	kg	397		
	Sub Total				

Annex 3.2 Bill of Quantity for Dry pit VIP Latrine for Boys at School (one block with 4 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
	3. Masonry and Block works				
3.1	Construct 40cm -120cm thick, roughly dressed hard trachytic or equivalent stone masonry wall bedded in cement sand mortar mix of 1:3 as specified in the drawing. The price includes Pointing for exposed surfaces or as directed by the engineer.	m^3	59		
3.2	Supply and construct partition walls made of 20cm thick concrete solid blocks. The solid blocks should be placed very carefully and jointed with the frame to prevent leak of liquids in cement sand mortar mix (1:3).	m^3	28		
	Sub Total				
	B. SUPER-STRUCTURE				
	1. CONCRETE WORKS				
1.1	Cast Reinforced concrete in class C-25 (with a 28-day 150mm cube crushing strength of 25MPa) and maximum aggregate size of 30mm cast into formworks and vibrated around rod reinforcement bars.(formwork & reinforcement bars are measured separately) in:				
	a) In elevation columns (20cm x 20cm)	m^3	1		
	b) In top tie beam (20cmx20cm)	m^3	1		
1.2	Provide, cut and fix in position sawn zigba wood formwork or equivalent for columns and top tie beams				
	a) In elevation columns	m^2	18		
	b) In top tie beams	m^2	20		
1.3	Cost to cut and fix Steel reinforcement steel bars according to structural drawing. Price includes cutting, bending, placing in position and tying wires.				
	a) dia. 6mm plane bar	kg	60		
	b) dia. 6mm plane bar	kg			
	c) dia. 12 mm deformed bar	kg	85		
	Sub total				
	2. BLOCK WORKS				
2.1	20cm thick hollow concrete block (class C) wall bedded in cement mortar 1:3 internal and external walls left for plastering. The quality has to be approved by the client prior to supply of HCB.	m^2	42		
2.2	Ditto but 15cm thick HCB wall (class C), The quality has to be approved by the client prior to supply of HCB.	m^2	22		
	Sub Total				
	3. ROOFING				
3.1	Supply and fix G-32 galvanized corrugated steel sheet roofing fixed to 5x7 cm purlins at c/c 90 cm. Horizontal projection of roof area shall be taken for measurement.	m^2	51		
3.2	Truss members of eucalyptus shall be well seasoned, straight and free of harmful defects. Each truss joint and members shall be firmly connected with strips of band iron. Price shall include approved 2 coats of anti termite paint to truss and purlins. Truss should be fixed with the top tie beam with Ø6 rebar and spaced at 120cm from each other.				

Annex 3.2 Bill of Quantity for Dry pit VIP Latrine for Boys at School (one block with 4 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
	a) Ø 10 cm or above eucalyptus upper and lower members	ml	79		
	b) Ø 8 cm or above eucalyptus bracing and internal members.	m	23		
	c) 5x7 cm zigba purlins , Price includes anti termite treatment	ml	39		
3.3	Supply and fix 20x2.5cm kerero or equivalent fascia board including 3 coats of weather resistant paint.	ml	41		
3.4	Supply and fix 18cmx18cmx12cm gutter made of G-28 sheet metal. Provide at least 0.2% slope towards the out let and connect the gutter in position using clamp and gutter support at 1m spacing. The work includes fixing the gutter on poisiton with binding wire, fixing the wire mesh over the gutter and all necessary works thereto. Price shall include one coat anti rust and two coats synthetic paint. (Optional)	ml	-		
3.5	Supply and fix Ø 110mm PVC down pipe and connect the down pipe to the water tanker. Cost includes all necessary works including fixing it with the wall, providing elbow, clamps, fischers and any other works required thereto. (Optional)	ml	-		
	Sub total				
	4. METAL WORKS				
	All metal doors and windows shall be fabricated from locally manufactured frame 1.25mm thick LTZ 38mm width, pressed metal with the necessary iron mongory, accessories and three coats of paint. The doors must be fixed with simple lock inside and outside. Price includes one coat anti rust and two coats synthetic paint internally and externally. It also includes provision of 40cm plastic cover at the bottom of each door.				
4.1	Ditto but 70x30 window with weir mesh and metallic frame as shown on the drawing	No	4		
4.2	Ditto but 100x210 (100cm is clear opening). Opening of this door is as shown on the drawing and has emergency door exit for disabilities latrine as shown on the drawing	No	1		
4.3	Ditto but 70x210 (70cm is clear opening). Opening of this door is as shown on the drawing.	No	3		
	Sub total				
	5. FINISHING				
	Cost for Finishing works which shall include all surface pre-cleaning. Preparation and application of finishing and cleaning at the end of finishing works				
5.1	Three coats of plastering in cement sand mortar of ratio 1:3 to HCB walls reinforced concrete beams & columns as per the drawing	m^2	79		
5.2	Pointing to HCB wall and exposed masonry walls in cement sand mortar of ratio 1:3 as per the drawing	m^2	44		
5.3	30 mm thick cement screed floor finishing in cement sand mortar of 1:3	m^2	53		
5.4	Construct Pavement made of masonry as shown in the drawing. The price includes drainage and Pointing of exposed parts.	m^2	12		
5.5	Install 110mm PVC vent pipe as per the drawing. The price includes providing opening hole in the CIS for passage, minimum two bracket support with HCB wall and fixing PVC with truss support & Truss.	Pcs	8		
5.6	Provide trough Boys urinal made of HCB. The HCB and the floor should be plastered with smooth finish. Cost includes all works including provision of Ø50mm PVC pipe connected to the pit latrine as per the detail of the drawing and supervisors recommendation.	Ls.	1		

Annex 3.2 Bill of Quantity for Dry pit VIP Latrine for Boys at School (one block with 4 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
5.7	Supply and install seat for disable as per the drawing. The seat should be suitable for using and smooth. The price includes 1" GS pipe for handrail.	Ls.	1		
5.8	Supply and install hand rail for ramp made of 1" GS pipe with bracers as shown in the drawing & direction by supervisor. The price includes all the necessary works for embedding the hand rail on the ramp & provision of materials thereto.	No	2		
5.9	Supply and Install 1000lt water tanker as shown in the drawing to be seat on a masonry platform. Cost includes the construction of masonry water tanker seat pointed to a good finish, pipe laying, supply and connect all necessary fittings as shown in the drawing.	Ls	1		
5.10	Supply and construct handwash basin connected to the latrine wall as shown on the drawing. Price includes 1/2" faucet, Ø50mm drainage PVC pipe connected to soak away pit, 1" PPR pipe connected from elevated tankers. The soak away pit located a minimum of 10m away from the latrine.	Ls	1		
5.11	Provide incinerator for disposal of wastes as per the drawing. Cost includes earth works, foundation works, masonry works, cylindrical concrete, piped chimney, 10cm thick RC slab, metal grids and ash disposal metallic door. (Optional)	No	1		
5.12	Provide Soak away pit as per the drawing (1.4x1.4x1.5m) filled with crushed gravel at a minimum distance of 10m from the latrine. The soak away is constructed in such away to accommodate with the slope of the drain pipe of hand washing facilities.	Ls.	1		
5.13	Apply wall paint to plastered external beams and columns surfaces	m^2	79		
5.14	Construct concrete Pavement as shown in the drawing. The price includes casting 10cm concrete, formwork, Steps construction, Chip wood expansion joint @2m C/C and Pointing on exposed parts.	m^2	7		
5.15	Provide Ramp with minimum size as shown in the drawing for easy accessing of Toilets. The price includes all necessary masonry works, hardcore, hand rail, Concrete top and Plastering on sides of wall.	pcs	1		
5.16	Provide ceramic squat for the drop holes with size of 45cm by 60cm or as approved by the engineer. The price includes all necessary concrete works and all other necessary works there to. (This is for Latrines to be used for Classes under 4^{th} grade). Optional to #5.17	pcs	3		
5.17	Provide foot rest made of concrete as specified on the drawing. The price includes all necessary works there to. (This is for Latrines to be used for Classes above 4^{th} grade). Optional to # 5.16	pcs	3		
	Sub total				
	6. ELECTRICAL INSTALLATION (OPTIONAL)				
	Supply and install: -				
6.1	**Light Points**				
	Flush mounted light points fed through PVC insulated conductors of 2x2.5mm2 inside PVC conduits of 13mm diameter, including junction boxes with covers and insulating screw cap connectors, complete	No	8		

Annex 3.2 Bill of Quantity for Dry pit VIP Latrine for Boys at School (one block with 4 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
6.2	Flush Mounted Switches (Type Legrand Suno or Equivalent)				
	Flush mounting single switch, 6A - flush mounted	No			
	Flush mounting One-way double gang - multi circuit switch, 6A - flush mounted	No	1		
	Flush mounting Two way switch, 6A - flush mounted	No			
6.3	Light Fittings and Lamps				
	(Specified Type or Equivalent				
	Connected and tested including lamps and accessories complete, all as specified or described in lighting fittings schedule and as shown on the drawings.				
6.3.1	PHILIPS Tornado 24W E27 6500K or Equivalent	No	4		
6.3.2	PHILIPS outdoor Lorikeets wall lantern LED black 1x3.5W water resistant IP44 or Equivalent	No	3		
6.3.3	PHILIPS TCW 215 with 1 x TL-D 360W Lamp or Equivalent	No	1		
6.4	Connect the power for Latrine light points fed through PVC insulated conductors of 2x2.5mm$_2$ inside PVC conduits of 13mm diameter to the School facility power source/Braker. Line will be supported by 2" GI Steel with concrete foundation @5m Spacing or as approved by the engineer. It also including all other supports as required. The Line path will be as approved layout. (optional to #6.5)	Ls	1		
6.5	Connect the power for Latrine light points fed through PVC insulated conductors of 2x2.5mm2 inside PVC conduits of 13mm diameter to the School facility power source/Breaker. The price includes trench excavation and selected backfilling work to burry/lay electric conduit to a minimum depth of 70cm below Ground level. The price includes placing warning tape 30cm below the Ground level and 50mm diameter PVC pipe at 70cm below the Ground level along the trench line. The Line path will be as approved layout. (optional to #6.4)	Ls	1		
	Sub total				
	Grand total				

Annex 3.3. Bill of Quantity for Dry pit VIP Latrine for Girls at School (one block with 4 seats)

I.N.	Description	Unit	Qty.	Unit price	Total Price
	A. SUB-STRUCTURE				
	1.EXCAVATION & EARTHWORKS				
1.1	Clear the site to remove top soil to an average depth of 20cm	m^2	78		
1.2	Bulk excavation of ordinary soil type for latrine to a depth not exceeding 400cm from reduced ground level	m^3	109		
1.3	Bulk excavation of rocky soil type for latrine to a depth exceeding 400cm from RGL	m^3	27		
1.4	Backfill around masonry wall & pavement with selected and non expansive material up to a required level and well consolidated in layers not exceeding 20cm thick	m^3	15		
1.5	Load and cart away surplus excavated material and deposited at an appropriate place not less than 1 km out side the site as approved by the Engineer	m^3	176		
1.6	Lay and compact 250 mm thick hard basaltic or equivalent stone hardcore, finished and blinded with crushed stone under Ramp & Pavement or as per the drawing	m^2	21		
	Sub Total				
	2.CONCRETE WORKS				
2.1	Lay 5cm thick lean concrete in C-5 with minimum cement content of 150kg/m^3				
	a) Under masonry foundation wall	m^2	21		
	b) Under foundation pads	m^2	10		
	c) Above hardcore of ramps	m^2	28		
2.2	Cast Reinforced concrete in class C-25 (with a 28-day 150mm cube crushing strength of 25MPa) and maximum aggregate size of 30mm cast into formworks and vibrated around rod reinforcement bars.(formwork & reinforcement bars are measured separately) in:				
	a) Grade beam (30cm x 30cm)	m^3	4		
	b) 15cm thick floor slab, Provide openings for vent pipes, squat hole, urine disposal pipe and manhole's as per the drawing. When finished the manhole cover should have lever with the rest of floor.	m^3	8		
	c) 10cm thick mass concrete for ramps as per the drawing and instruction from the supervisor.	m^3	1		
2.3	Provide, cut and fix in position sawn zigba wood formwork or equivalent for;				
	a) Grade beam	m^2	23		
	b) 15cm thick floor slab	m^2	32		
	c) Footing	m^2			
2.4	Cost to supply, cut and fix Reinforcement steel bars according to structural drawing. Price includes cutting, bending, placing in position and tying wires.				
	a) dia. 6mm plain bar	kg	64		
	b) dia. 8mm deformed bar	kg			
	c) dia. 12 mm deformed bar	kg	397		
	Sub Total				

Annex 3.3. Bill of Quantity for Dry pit VIP Latrine for Girls at School (one block with 4 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
	3. Masonry and Block works				
3.1	Construct 40cm -120cm thick, roughly dressed hard trachytic or equivalent stone masonry wall bedded in cement sand mortar mix of 1:3 as specified in the drawing. The price includes Pointing for exposed surfaces or as directed by the engineer.	m^3	59		
3.2	Supply and construct partition walls made of 20cm thick concrete solid blocks. The solid blocks should be placed very carefully and jointed with the frame to prevent leak of liquids in cement sand mortar mix (1:3).	m^3	28		
	Sub Total				
	B. SUPER-STRUCTURE				
	1. CONCRETE WORKS				
1.1	Cast Reinforced concrete in class C-25 (with a 28-day 150mm cube crushing strength of 25MPa) and maximum aggregate size of 30mm cast into formworks and vibrated around rod reinforcement bars.(formwork & reinforcement bars are measured separately) in:				
	a) In elevation columns (20cm x 20cm)	m^3	1		
	b) In top tie beam (20cmx20cm)	m^3	1		
1.2	Provide, cut and fix in position sawn zigba wood formwork or equivalent for columns and top tie beams				
	a) In elevation columns	m^2	18		
	b) In top tie beams	m^2	20		
1.3	Cost to cut and fix Steel reinforcement steel bars according to structural drawing. Price includes cutting, bending, placing in position and tying wires.				
	a) dia. 6mm plane bar	kg	60		
	b) dia. 6mm plane bar	kg			
	c) dia. 12 mm deformed bar	kg	85		
	Sub total				
	2. BLOCK WORKS				
2.1	20cm thick hollow concrete block (class C) wall bedded in cement mortar 1:3 internal and external walls left for plastering. The quality has to be approved by the client prior to supply of HCB.	m^2	42		
2.2	Ditto but 15cm thick HCB wall (class C), The quality has to be approved by the client prior to supply of HCB.	m^2	22		
2.3	Ditto but 10 cm to girls urinals partition walls, (class C) (The quality has to be approved by the client prior to supply of HCB).	m^2	3		
	Sub Total				
	3. ROOFING				
3.1	Supply and fix G-32 galvanized corrugated steel sheet roofing fixed to 5x7 cm purlins at c/c 90 cm. Horizontal projection of roof area shall be taken for measurement.	m^2	51		

Annex 3.3. Bill of Quantity for Dry pit VIP Latrine for Girls at School (one block with 4 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
3.2	Truss members of eucalyptus shall be well seasoned, straight and free of harmful defects. Each truss joint and members shall be firmly connected with strips of band iron. Price shall include approved 2 coats of anti termite paint to truss and purlins. Truss should be fixed with the top tie beam with Ø6 rebar and spaced at 120cm from each other.				
	a) Ø 10 cm or above eucalyptus upper and lower members	ml	79		
	b) Ø 8 cm or above eucalyptus bracing and internal members.	m	23		
	c) 5x7 cm zigba purlins , Price includes anti termite treatment	ml	39		
3.3	Supply and fix 20x2.5cm kerero or equivalent fascia board including 3 coats of weather resistant paint.	ml	41		
3.4	Supply and fix 18cmx18cmx12cm gutter made of G-28 sheet metal. Provide at least 0.2% slope towards the out let and connect the gutter in position using clamp and gutter support at 1m spacing. The work includes fixing the gutter on poisiton with binding wire, fixing the wire mesh over the gutter and all necessary works thereto. Price shall include one coat anti rust and two coats synthetic paint. (Optional)	ml	-		
3.5	Supply and fix Ø 110mm PVC down pipe and connect the down pipe to the water tanker. Cost includes all necessary works including fixing it with the wall, providing elbow, clamps, fischers and any other works required thereto. (Optional)	ml	-		
	Sub total				
	4. METAL WORKS				
	All metal doors and windows shall be fabricated from locally manufactured frame 1.25mm thick LTZ 38mm width, pressed metal with the necessary iron mongory, accessories and three coats of paint. The doors must be fixed with simple lock inside and outside. Price includes one coat anti rust and two coats synthetic paint internally and externally. It also includes provision of 40cm plastic cover at the bottom of each door.				
4.1	Ditto but 70x30 window with weir mesh and metallic frame as shown on the drawing	No	4		
4.2	Ditto but 100x210 (100cm is clear opening). Opening of this door is as shown on the drawing and has emergency door exit for disabilities latrine as shown on the drawing	No	1		
4.3	Ditto but 70x210 (70cm is clear opening). Opening of this door is as shown on the drawing.	No	3		
	Sub total				
	5. FINISHING				
	Cost for Finishing works which shall include all surface pre-cleaning. Preparation and application of finishing and cleaning at the end of finishing works				
5.1	Three coats of plastering in cement sand mortar of ratio 1:3 to HCB walls reinforced concrete beams & columns as per the drawing	m^2	79		
5.2	Pointing to HCB wall and exposed masonry walls in cement sand mortar of ratio 1:3 as per the drawing	m^2	44		
5.3	30 mm thick cement screed floor finishing in cement sand mortar of 1:3	m^2	53		
5.4	Construct Pavement made of masonry as shown in the drawing. The price includes drainage and Pointing of exposed parts.	m^2	12		

Annex 3.3. Bill of Quantity for Dry pit VIP Latrine for Girls at School (one block with 4 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
5.5	Install 110mm PVC vent pipe as per the drawing. The price includes providing opening hole in the CIS for passage, minimum two bracket support with HCB wall and fixing PVC with truss support & Truss.	Pcs	8		
5.6	Provide trough Boys urinal made of HCB. The HCB and the floor should be plastered with smooth finish. Cost includes all works including provision of Ø50mm PVC pipe connected to the pit latrine as per the detail of the drawing and supervisors recommendation.	Ls.	1		
5.7	Supply and install seat for disable as per the drawing. The seat should be suitable for using and smooth. The price includes 1" GS pipe for handrail.	Ls.	1		
5.8	Supply and install hand rail for ramp made of 1" GS pipe with bracers as shown in the drawing & direction by supervisor. The price includes all the necessary works for embedding the hand rail on the ramp & provision of materials thereto.	No	2		
5.9	Supply and Install 1000lt water tanker as shown in the drawing to be seat on a masonry platform. Cost includes the construction of masonry water tanker seat pointed to a good finish, pipe laying, supply and connect all necessary fittings as shown in the drawing.	Ls	1		
5.10	Supply and construct handwash basin connected to the latrine wall as shown on the drawing. Price includes 1/2" faucet, Ø50mm drainage PVC pipe connected to soak away pit, 1" PPR pipe connected from elevated tankers. The soak away pit located a minimum of 10m away from the latrine.	Ls	1		
5.11	Provide incinerator for disposal of wastes as per the drawing. Cost includes earth works, foundation works, masonry works, cylindrical concrete, piped chimney, 10cm thick RC slab, metal grids and ash disposal metallic door. (Optional)	No	1		
5.12	Provide Soak away pit as per the drawing (1.4x1.4x1.5m) filled with crushed gravel at a minimum distance of 10m from the latrine. The soak away is constructed in such away to accommodate with the slope of the drain pipe of hand washing facilities.	Ls.	1		
5.13	Apply wall paint to plastered external beams and columns surfaces	m^2	79		
5.14	Construct concrete Pavement as shown in the drawing. The price includes casting 10cm concrete, formwork, Steps construction, Chip wood expansion joint @2m C/C and Pointing on exposed parts.	m^2	7		
5.15	Supply and fix sanitary pad disposal box as shown in the drawing. The price includes earth work, masonry & HCB works, plastering, G-32 roof cover with truss works, providing metallic flip door(25x25cm), metallic drawer (20x50cm) and any other work required thereto.	Ls	1		
5.16	Provide Ramp with minimum size as shown in the drawing for easy accessing of Toilets. The price includes all necessary masonry works, hardcore, hand rail, Concrete top and Plastering on sides of wall.	pcs	1		
5.17	Provide ceramic squat for the drop holes with size of 45cm by 60cm or as approved by the engineer. The price includes all necessary concrete works and all other necessary works there to. (This is for Latrines to be used for Classes under 4^{th} grade). Optional to #5.17	pcs	3		
5.18	Provide foot rest made of concrete as specified on the drawing. The price includes all necessary works there to. (This is for Latrines to be used for Classes above 4^{th} grade). Optional to # 5.16	pcs	3		
	Sub total				

Annex 3.3. Bill of Quantity for Dry pit VIP Latrine for Girls at School (one block with 4 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
	6. ELECTRICAL INSTALLATION (OPTIONAL)				
	Supply and install: -				
6.1	**Light Points**				
	Flush mounted light points fed through PVC insulated conductors of 2x2.5mm2 inside PVC conduits of 13mm diameter, including junction boxes with covers and insulating screw cap connectors, complete	No	8		
6.2	Flush Mounted Switches (Type Legrand Suno or Equivalent)				
	Flush mounting single switch, 6A - flush mounted	No			
	Flush mounting One-way double gang - multi circuit switch, 6A - flush mounted	No	1		
	Flush mounting Two way switch, 6A - flush mounted	No			
6.3	Light Fittings and Lamps				
	(Specified Type or Equivalent				
	Connected and tested including lamps and accessories complete, all as specified or described in lighting fittings schedule and as shown on the drawings.				
6.3.1	PHILIPS Tornado 24W E27 6500K or Equivalent	No	4		
6.3.2	PHILIPS outdoor Lorikeets wall lantern LED black 1x3.5W water resistant IP44 or Equivalent	No	3		
6.3.3	PHILIPS TCW 215 with 1 x TL-D 360W Lamp or Equivalent	No	1		
6.4	Connect the power for Latrine light points fed through PVC insulated conductors of 2x2.5mm$_2$ inside PVC conduits of 13mm diameter to the School facility power source/Braker. Line will be supported by 2" GI Steel with concrete foundation @5m Spacing or as approved by the engineer. It also including all other supports as required. The Line path will be as approved layout. (optional to #6.5)	Ls	1		
6.5	Connect the power for Latrine light points fed through PVC insulated conductors of 2x2.5mm2 inside PVC conduits of 13mm diameter to the School facility power source/Breaker. The price includes trench excavation and selected backfilling work to burry/lay electric conduit to a minimum depth of 70cm below Ground level. The price includes placing warning tape 30cm below the Ground level and 50mm diameter PVC pipe at 70cm below the Ground level along the trench line. The Line path will be as approved layout. (optional to #6.4)	Ls	1		
	Sub total				
	Grand total				

Annex 3.4 Bill of Quantity for MHM Room at Schools (one block with 4 rooms)

I.N.	Description	Unit	Qty.	Unit price	Total Price
	A. SUB-STRUCTURE				
	1.EXCAVATION & EARTHWORKS				
1.1	Clear the site to remove top soil to an average depth of 20cm	M^2	76.9		
1.2	Bulk excavation of ordinary soil type for MHM room to a depth not exceeding 400cm from reduced ground level	M^3	30.02		
1.3	Bulk excavation of any soil type for MHM room to a depth not exceeding 50cm	M^3	171.36		
1.4	Bulk excavation of rocky soil type for MHM room to a depth exceeding 400cm from NGL	M^3	20.14		
1.5	Backfill around masonry wall & pavement with selected and non-expansive material up to a required level and well consolidated in layers not exceeding 20cm thick	M^3	10.99		
1.6	Load and cart away surplus excavated material and deposited at an appropriate place not less than 1 km out side the site as approved by the Engineer	M^3	201.4		
1.7	Lay and compact 250 mm thick hard basaltic or equivalent stone hardcore, finished and blinded with crushed stone under Ramp & Pavement or as per the drawing	M^2	34.62		
	Sub total				
	2.CONCRETE WORKS				
2.1	Lay 5cm thick lean concrete in C-5 with minimum cement content of 150kg/m^3				
	a) Under masonry foundation wall	M^2	6.48		
	b) Under foundation pads	M^2			
	c) Above hardcore of ramps	M^2			
2.2	Cast Reinforced concrete in class C-25 (with a 28-day 150mm cube crushing strength of 25MPa) and maximum aggregate size of 30mm cast into formworks and vibrated around rod reinforcement bars.(formwork & reinforcement bars are measured separately) in:				
	a) Grade beam (30cm x 30cm)	M^3	2.13		
	b) 15cm thick floor slab,	M^3	3.5		
	c) 10cm thick mass concrete for ramps as per the drawing and instruction from the supervisor.	M^3	0.68		
2.3	Provide, cut and fix in position sawn zigba wood formwork or equivalent for:-				
	a) Grade beam	M^2	17.7		
	b) 15cm thick floor slab	M^2	3.74		
	c) Footing	M^2			
2.4	Cost to supply, cut and fix Reinforcement steel bars according to structural drawing. Price includes cutting, bending, placing in position and tying wires.				
	a) dia. 6mm plain bar	Kg	196.7		
	b) dia. 8mm deformed bar	Kg			
	c) dia. 12 mm deformed bar	Kg	415		
	Sub total				

Annex 3.4 Bill of Quantity for MHM Room at Schools (one block with 4 rooms)-Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
	3. Masonry and Block works				
3.1	Construct 40cm -120cm thick, roughly dressed hard trachytic or equivalent stone masonry wall bedded in cement sand mortar mix of 1:3 as specified in the drawing. The price includes Pointing for exposed surfaces or as directed by the engineer.	M^3	23.79		
	Sub total				
	B. SUPER-STRUCTURE				
	1. CONCRETE WORKS				
1.1	Cast Reinforced concrete in class C-25 (with a 28-day 150mm cube crushing strength of 25MPa) and maximum aggregate size of 30mm cast into formworks and vibrated around rod reinforcement bars.(formwork & reinforcement bars are measured separately) in:				
	a) In elevation columns (20cm x 20cm)	M^3	0.83		
	b) In top tie beam (20cmx20cm)	M^3	1.37		
1.2	Provide, cut and fix in position sawn zigba wood formwork or equivalent for columns and top tie beams				
	a) In elevation columns	M^2	16.64		
	b) In top tie beams	M^2	18.96		
1.3	Cost to cut and fix Steel reinforcement steel bars according to structural drawing. Price includes cutting, bending, placing in position and tying wires.				
	a) dia. 6mm plane bar	Kg	150		
	b) dia. 8mm plane bar	Kg			
	c) dia. 12 mm deformed bar	Kg	195		
	Sub total				
	2. BLOCK WORKS				
2.1	20cm thick hollow concrete block (class C) wall bedded in cement mortar 1:3 internal and external walls left for plastering. The quality has to be approved by the client prior to supply of HCB.	M^2	36.25		
2.2	Ditto but 15cm thick HCB wall (class C), The quality has to be approved by the client prior to supply of HCB.	M^2	20		
	Sub total				
	3. ROOFING				
3.1	Supply and fix G-32 galvanized corrugated steel sheet roofing fixed to 5x7 cm purlins at c/c 90 cm. Horizontal projection of roof area shall be taken for Measurement.	M	34.06		
3.2	Truss members of eucalyptus shall be well seasoned, straight and free of harmful defects. Each truss joint and members shall be firmly connected with strips of band iron. Price shall include approved 2 coats of anti-termite paint to truss and purlins. Truss should be fixed with the top tie beam with Ø6 rebar and spaced at 120cm from each other.				
	a) Ø 10 cm or above eucalyptus upper and lower members	M			
	b) Ø 8 cm or above eucalyptus bracing and internal members	M			
	c) 5x7 cm zigba purlins , Price includes anti termite treatment	M			
	d) chip wood	M^2	30		
3.3	Supply and fix 20x2.5cm kerero or equivalent fascia board including 3 coats of weather resistant paint.	M	32		

Annex 3.4 Bill of Quantity for MHM Room at Schools (one block with 4 rooms)-Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
3.4	Supply and fix 18cmx18cmx12cm gutter made of G-28 sheet metal. Provide at least 0.2% slope towards the out let and connect the gutter in position using clamp and gutter support at 1m spacing. The work includes fixing the gutter on position with binding wire, fixing the wire mesh over the gutter and all necessary works thereto. Price shall include one coat anti rust and two coats synthetic paint. (Optional)	M			
3.5	Supply and fix Ø 110mm PVC down pipe and connect the down pipe to the water tanker. Cost includes all necessary works including fixing it with the wall, providing elbow, clamps, fischers and any other works required thereto. (Optional)	Ls			
	Sub total				
	4. METAL WORKS				
4.1	All metal doors and windows shall be fabricated from locally manufactured frame 1.25mm thick LTZ 38mm width, pressed metal with the necessary iron mongory, accessories and three coats of paint. The doors must be fixed with simple lock inside and outside. Price includes one coat anti rust and two coats synthetic paint internally and externally. It also includes provision of 40cm plastic cover at the bottom of each door.				
4.2	Ditto but 100x210 (100cm is clear opening). Opening of this door is as shown on the drawing	No	1		
4.3	Ditto but 70x120 (70cm is clear opening). Opening of this door is as shown on the drawing	No	3		
	Sub total				
	5. FINISHING				
	Cost for Finishing works which shall include all surface pre-cleaning. Preparation and application of finishing and cleaning at the end of finishing works				
5.1	Three coats of plastering in cement sand mortar of ratio 1:3 to HCB internal and external walls as per the drawing	M^2	72.6		
5.2	Pointing to HCB wall and exposed masonry walls in cement sand mortar of ratio 1:3 as per the drawing	M^2	4		
5.3	30 mm thick cement screed floor finishing in cement sand mortar of 1:3	M^2	22		
5.4	Construct Pavement made of masonry as shown in the drawing. The price includes drainage and Pointing of exposed parts.	M^2	3		
5.5	Supply and construct hand rail1" GS pipe for handrail in a Shower the seat should be suitable for disable made of HCB. The HCB and the floor should be plastered, provided cloth washing trough and covered by Ceramic, Supply and construct handwash basin connected to the MHM room wall as shown on the drawing. The soak away pit located a minimum of 10m away from the MHM Room. Price includes 1/2" faucet, Ø50mm drainage PVC pipe connected to soak away pit, 1" PPR pipe connected from elevated tanker's as per the detail of the drawing and supervisors recommendation.	Ls	1		
5.6	Supply and install hand rail for ramp made of 1" GS pipe with bracers as shown in the drawing & direction by supervisor. The price includes all the necessary works for embedding the hand rail on the ramp & provision of materials thereto.	No	1		
5.7	Supply and Install 1000lt water tanker as shown in the drawing to be seat on a masonry platform. Cost includes the construction of masonry water tanker seat pointed to a good finish, pipe laying, supply and connect all necessary fittings as shown in the drawing	Ls	1		

Annex 3.4 Bill of Quantity for MHM Room at Schools (one block with 4 rooms) - Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
5.8	Supply and construct handwash basin connected to the latrine wall as shown on the drawing. Price includes 1/2" faucet, Ø50mm drainage PVC pipe connected to soak away pit, 1" PPR pipe connected from elevated tanker's. The soak away pit located a minimum of 10m away from the latrine.	Ls	1		
5.9	Apply wall paint to plastered internal wall surfaces	M^2	32.2		
5.10	Supply and fix sanitary pad disposal box as shown in the drawing. The price includes earth work, masonry & HCB works, plastering, G-32 roof cover with truss works, providing metallic flip door(25x25cm), metallic drawer (20x50cm) and any other work required thereto.	Ls	1		
5.11	Provide Ramp with minimum size as shown in the drawing for easy accessing of Toilets. The price includes all necessary masonry works, hardcore, hand rail, Concrete top and plastering on sides of wall.	Pcs	1		
5.12	Ceramic floor finish	M^2	12.6		
5.13	Provide Soak away pit as per the drawing (1.4x1.4x1.5m) filled with crushed gravel at a minimum distance of 10m from the latrine. The soak away is constructed in such away to accommodate with the slope of the drain pipe of hand washing facilities.	Ls	1		
	Sub total				
	6. ELECTRICAL INSTALLATION (OPTIONAL)				
	Supply and install: -				
6.1	**Light Points**				
	Flush mounted light points fed through PVC insulated conductors of 2x2.5mm2 inside PVC conduits of 13mm diameter, including junction boxes with covers and insulating screw cap connectors, complete	No	5		
6.2	Flush Mounted Switches (Type Legrand Suno or Equivalent)				
	Flush mounting single switch, 6A - flush mounted	No	5		
	Flush mounting One-way double gang - multi circuit switch, 6A - flush mounted	No			
	Flush mounting Two-way switch, 6A - flush mounted	No			
6.3	Light Fittings and Lamps				
	(Specified Type or Equivalent				
	Connected and tested including lamps and accessories complete, all as specified or described in lighting fittings schedule and as shown on the drawings.				
6.3.1	PHILIPS Tornado 24W E27 6500K or Equivalent	No	3		
6.3.2	PHILIPS outdoor Lorikeets wall lantern LED black 1x3.5W water resistant IP44 or Equivalent	No	1		
6.3.3	PHILIPS TCW 215 with 1 x TL-D 360W Lamp or Equivalent	No	1		
6.4	Connect the power for Latrine light points fed through PVC insulated conductors of 2x2.5mm2 inside PVC conduits of 13mm diameter to the School facility power source/Braker. Line will be supported by 2" GI Steel with concrete foundation @5m Spacing or as approved by the engineer. It also including all other supports as required. The Line path will be as approved layout. (optional to #6.5)	Ls	1		

Annex 3.4 Bill of Quantity for MHM Room at Schools (one block with 4 rooms) - Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
6.5	Connect the power for Latrine light points fed through PVC insulated conductors of 2x2.5mm2 inside PVC conduits of 13mm diameter to the School facility power source/Breaker. The price includes trench excavation and selected backfilling work to burry/lay electric conduit to a minimum depth of 70cm below Ground level. The price includes placing warning tape 30cm below the Ground level and 50mm diameter PVC pipe at 70cm below the Ground level along the trench line. The Line path will be as approved layout. (optional to #6.4)	Ls	1		
6.6	**Socket Fittings**				
	(Specified Type or Equivalent)				
	Connected and tested including socket and accessories complete, all as specified or described in socket fittings schedule and as shown on the drawings.				
6.6.1	16A socket outlet point with wire 3 x 2.5mmsq, fixed 300mm above finished floor level, flush	No	4		
6.6.2	16A, Socket outlet point for water heater wired through 3 x 2.5mmsq,fixed 1800mm	No	1		
	Sub total				
	Grand total				

Annex 4. Bill of Quantity for Health Institutions Latrines

Annex 4.1 Bill of Quantity for VIP Latrine for Health Post (for one block with 2 seats)

I.N.	Description	Unit	Qty.	Unit price	Total Price
	A. Sub Structure				
1	**Site and Earth Work**				
1.1	Clearing and grubbing of shrubs and trees including stumps and roots on the construction site	M^2	25		
1.2	Excavation of soil for Latrine construction to a depth not exceeding 1.5 meters below strip ground level.	M^3	33.8		
1.3	Ditto, but below 1.5 meters and not exceeding 3.5 meters	M^3	33.8		
1.4	Ditto, but for strip foundation	M^3	4.5		
1.5	Back filling around the masonry wall with selected excavated material	M^3	19.7		
1.6	Carting away excess excavated material within the site boundary	M^3	35.1		
	Sub total				
2	**Concrete works**				
2.1	5cm thick lean concrete class C-5, 150 kg cement/m^3 of concrete, under masonry foundation wall.	M^2	17.76		
2.2	Reinforced concrete, C-20, 320 kg cement / m^3 of concrete filled in formwork and vibrated around reinforcement. Reinforcement steel measured separately				
2.2.1	For floor slab 15 cm thick	M^3	1.6		
2.2.2.	Ditto but for grade beam	M^3	1.53		
2.3	Supply cut, bend & fix in position steel reinforcement as per the detailed drawing, Price includes all incidental works to execute the job				
2.3.1	dia 12mm	Kg	230		
2.3.2	dia 6mm	Kg	20		
2.4	Filling with 400mm thick 5 - 7mm diameter l filter media as shown on the drawing or as directed by the Engineer				
2.4.1	For grade beam	M^3	11		
2.4.2	For floor slab	M^3	12.5		
	Sub total				
3	**Masonry work**				
3.1	Trachytic or equivalent stone masonry wall as a wall for the latrine pit as per the detail drawing bedded in cement mortar (1:4) in full joints. Price includes scaffolding and all other supports to execute the job in the pit.	M^3	34		
3.2	Stone pitching walk away around the latrine	M^2	12		
	Sub total				

Annex 4.1 Bill of Quantity for VIP Latrine for Health Post (for one block with 2 seats)

I.N.	Description	Unit	Qty.	Unit price	Total Price
	B. Super Structure				
4	**Concrete Works**				
	Reinforced concrete, c-25, 360 kg cement / m3 of concrete filled in formwork and vibrated around reinforcement. Reinforcement steel measured separately				
A	In elevation column	M^3	0.6		
B	In top tie beam	M^3	0.41		
4.2	Provide, cut and place in position sawn zigba or equivalent wooden formwork				
A	In elevation column	M^2	9		
B	In top tie beam	M^2	6		
4.3	Provide, cut and place in position sawn zigba or equivalent wooden formwork				
A	dia. 6mm	Kg	15		
B	dia. 12mm	Kg	70		
	Sub total				
5	**Block Work**				
5.1	20x20x40cm class C hollow concrete block wall in cement sand mortar 1:3 both side left for plastering. Price includes scaffolding or any support to execute the job up to the roof level.	M^2	24		
5.2	15x20x40cm class C hollow concrete block wall in cement sand mortar 1;3 both side left for plastering. Price includes scaffolding or any support to execute the job up to the roof level.	M^2	3.7		
5.3	San plate (60x60 cm2) one for each toilet room	Pcs	2		
5.4	Supply and place squatting plate for disables users as shown in the detailed drawings. Price includes 3/4-inch galvanized steel pipe or equivalent material handrail	Ls	1		
5.5	Supply and place menstrual facility as shown in the detailed drawings with 15 litres Roto or fiber glass container.	Ls	2		
	Sub total				
6	**Roof work**				
6.1	Roof cover in G32 CIS nailed to 5x7 cm battens as per the drawing. Price includes all incidental works to execute the job	M^2	10		
6.2	Supply and fix G-32 galvanized sheet metal gutter and dawn pipe				
A	Gutter 60cm development length	M	3		
B	Dawn pipe 33cm development length	M	5		
6.3	Supply and fix dia. 100mm uPVC vent pipe including vent cup and fly screen as shown in the drawing	Pcs	2		
	Sub total				
7	**Carpentry work**				
	All structural truss members shall be in seasoned eucalyptus wood and painted two coats of anti termite solution and shall be tightly fixed to top tie beam with 6 mm plain bar				

Annex 4.1 Bill of Quantity for VIP Latrine for Health Post (for one block with 2 seats)-Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
7.1	Diameter 8cm eucalyptus upper and lower chord	M	20		
7.2	Diameter 6 cm eucalyptus vertical and diagonal member	M	10		
7.3	50 x 70 mm zigba or equivalent purlin	M	15		
	Sub total				
8	**Metal work**				
8.1	All metal doors are manufactured from locally produced LTZ steel profile frames. All works shall be cut and assembled to sizes and shapes of the door schedule upon submitting shop drawings to be approved by the supervisor. Price includes cylinder lock or similar, door stoppers and all other accessories to complete the work to acceptable standard.				
8.1.1	Type size 70 x 210 cm	Pcs	1		
8.1.2	Type size 100 x 210 cm	Pcs	1		
	Sub total				
9	**Plastering and Pointing works**				
9.1	Pointing all internal and external HCB wall surface with cement sand mortar 1:2	M^2	18		
9.2	Apply three coat of plastering to beam and column surface	M^2	6		
9.3	Apply three coat of plastering to beam and column surface	M^2	5		
	Sub total				
	C. Miscellaneous works				
1	**Hand Washing**				
1.1	10 cm thick concrete strip footing for masonry structure	M^2	0.7		
1.2	Supply and construct trachytic or equivalent stone masonry structure for hand washing above ground level bedded in cement mortar (1:3) in full joints	M^3	0.5		
1.3	Apply three coats of plastering to the exposed surface of the structure.	M^2	2		
1.4	Supply and install 1/2'' faucet connected to the pipe line from elevated reservoir	Pcs	3		
1.5	Supply and install 50 mm uPVC drain pipe and connect to the sewer pipe of the compound. Price includes all accessories	M	2		
	Sub total				
2	**Rump entrance**				
2.1	Supply and place 25cm hardcore on compacted soil at the rump entrance of the latrine providing a maximum of 6% slope.	M^2	2		
2.2	Place 5cm thick lean concrete class C-5, 150 kg cement/m^3 of concrete.	M^2	2		
2.3	Supply and place class C-20 concrete 10 cm thick rump floor with minimum cement content of 320 kg /m^3 of cement	M^2	2		
2.4	Supply and fix 1'' galvanized steel pipe or equivalent material hand rail spaced at 30 cm c/c.	M	7.5		
2.5	Supply and fix precast concrete manhole cover as shown on the drawing	Pcs	2		
	Sub total				
	Grand total				

Annex 4.2. Bill of Quantity for VIP Latrine for Health Center (for one block with 5 seats)

I.N.	Description	Unit	Qty.	Unit price	Total Price
	B. Sub Structure				
1	**Site and Earth Work**				
1.1	Clearing and grubbing of shrubs and trees including stumps and roots on the construction site	M^2	63.86		
1.2	Excavation of soil for Latrine construction to a depth not exceeding 1.5 meters below strip ground level.	M^3	72.54		
1.3	Ditto, but below 1.5 meters and not exceeding 3.5 meters	M^3	96.72		
1.4	Ditto, but for strip foundation	M^3	8.7		
1.5	Back filling around the masonry wall with selected excavated material	M^3	37		
1.6	Carting away excess excavated material within the site boundary	M^3	140.96		
	Sub total				
2	**Concrete works**				
2.1	5cm thick lean concrete class C-5, 150 kg cement/m^3 of concrete, under masonry foundation wall.	M^2	34.08		
2.2	Reinforced concrete, C-20, 320 kg cement / m^3 of concrete filled in formwork and vibrated around reinforcement. Reinforcement steel measured separately				
2.2.1	For floor slab 15 cm thick	M^3	2.85		
2.2.2.	Ditto but for grade beam	M^3	2.05		
2.3	Supply cut, bend & fix in position steel reinforcement as per the detailed drawing, Price includes all incidental works to execute the job				
2.3.1	dia 12mm	Kg	352		
2.3.2	dia 6mm	Kg	40		
2.4	Filling with 400mm thick 5 - 7mm diameter l filter media as shown on the drawing or as directed by the Engineer				
2.4.1	For grade beam	M^3	20		
2.4.2	For floor slab	M^3	25.5		
	Sub total				
3	**Masonry work**				
3.1	Trachytic or equivalent stone masonry wall as a wall for the latrine pit as per the detail drawing bedded in cement mortar (1:4) in full joints. Price includes scaffolding and all other supports to execute the job in the pit.	M^3	55		
3.2	Stone pitching walk away around the latrine	M^2	25		
	Sub total				

Annex 4.2. Bill of Quantity for VIP Latrine for Health Center (for one block with 5 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
	B. Super Structure				
4	**Concrete Works**				
	Reinforced concrete, C-25, 360 kg cement / m3 of concrete filled in formwork and vibrated around reinforcement. Reinforcement steel measured separately				
A	In elevation column	M^3	1.5		
B	In top tie beam	M^3	1		
4.2	Provide, cut and place in position sawn zigba or equivalent wooden formwork	M^3			
A	In elevation column	M^2	12		
B	In top tie beam	M^2	8		
4.3	Provide, cut and place in position sawn zigba or equivalent wooden formwork				
A	dia. 6mm	Kg	40		
B	dia. 12mm	Kg	160		
	Sub total				
5	**Block Work**				
5.1	20x20x40cm class C hollow concrete block wall in cement sand mortar 1:3 both side left for plastering. Price includes scaffolding or any support to execute the job up to the roof level.	M^2	30		
5.2	15x20x40cm class C hollow concrete block wall in cement sand mortar 1:3 both side left for plastering. Price includes scaffolding or any support to execute the job up to the roof level.	M^2	18		
5.3	San plate (60x60 cm2) one for each toilet room	Pcs	5		
5.4	Supply and place squatting plate for disables users as shown in the detailed drawings. Price includes 3/4-inch galvanized steel pipe or equivalent material handrail	Ls	1		
5.5	Supply and place menstrual facility as shown in the detailed drawings with 15 litres Roto or fiber glass container (at least in two toilet rooms).	Ls	2		
	Sub total				
6	**Roof work**				
6.1	Roof cover in G32 CIS nailed to 5x7 cm battens as per the drawing. Price includes all incidental works to execute the job	M^2	25		
6.2	Supply and fix G-32 galvanized sheet metal gutter and dawn pipe				
A	Gutter 60cm development length	M	8.5		
B	Dawn pipe 33cm development length	M	10		
6.3	Supply and fix dia. 100mm uPVC vent pipe including vent cup and fly screen as shown in the drawing	Pcs	5		
	Sub total				
7	**Carpentry work**				
	All structural truss members shall be in seasoned eucalyptus wood and painted two coats of anti termite solution and shall be tightly fixed to top tie beam with 6 mm plain bar				

Annex 4.2. Bill of Quantity for VIP Latrine for Health Center (for one block with 5 seats)- Continued

I.N.	Description	Unit	Qty.	Unit price	Total Price
7.1	Diameter 8cm eucalyptus upper and lower chord	M	30		
7.2	Diameter 6 cm eucalyptus vertical and diagonal member	M	20		
7.3	50 x 70 mm zigba or equivalent purlin	M	38		
8	**Metal work**				
8.1	All metal doors are manufactured from locally produced LTZ steel profile frames. All works shall be cut and assembled to sizes and shapes of the door schedule upon submitting shop drawings to be approved by the supervisor. Price includes cylinder lock or similar, door stoppers and all other accessories to complete the work to acceptable standard.				
8.1.1	Type size 70 x 210 cm	Pcs	4		
8.1.2	Type size 100 x 210 cm	Pcs	1		
	Sub total				
9	**Plastering and Pointing works**				
9.1	Pointing all internal and external HCB wall surface with cement sand mortar 1:2	M^2	95		
9.2	Apply three coat of plastering to beam and column surface	M^2	4.5		
9.3	Apply three coat of plastering to beam and column surface	M^2	16		
	Sub total				
	C. Miscellaneous works				
1	**Hand Washing**				
1.1	10 cm thick concrete strip footing for masonry structure	M^2	0.7		
1.2	Supply and construct trachytic or equivalent stone masonry structure for hand washing above ground level bedded in cement mortar (1:3) in full joints	M^3	0.5		
1.3	Apply three coats of plastering to the exposed surface of the structure.	M^2	2		
1.4	Supply and install 1/2'' faucet connected to the pipe line from elevated reservoir	Pcs	3		
1.5	Supply and install 50 mm uPVC drain pipe and connect to the sewer pipe of the compound. Price includes all accessories	M	2		
	Sub total				
2	**Rump entrance**				
2.1	Supply and place 25cm hardcore on compacted soil at the rump entrance of the latrine providing a maximum of 6% slope.	M^2	2		
2.2	Place 5cm thick lean concrete class C-5, 150 kg cement/m^3 of concrete.	M^2	2		
2.3	Supply and place class C-20 concrete 10 cm thick rump floor with minimum cement content of 320 kg /m^3 of cement	M^2	2		
2.4	Supply and fix 1'' galvanized steel pipe or equivalent material hand rail spaced at 30 cm c/c.	M	7.5		
2.5	Supply and fix precast concrete manhole cover as shown on the drawing	Pcs	2		
	Sub total				
	Grand total				

Annex 4.3. Bill of Quantity for VIP Latrine for Incinerator

I.N.	Description	Unit	Qty.	Unit price	Total Price
	C. Sub Structure				
1	**Site and Earth Work**				
1.1	Clearing of top soil (200mm)	M^2	13		
1.2	Excavation for strip foundation	M^3	1		
1.3	Cart away excavated material to a distance not exceeding 1km	M^3	4		
1.4	Provide and fill hard core with hard basaltic or equivalent stone, well compacted and blinded with crushed stone to a finished thickness of 25cm	M^3	1		
	Sub total				
2	**Concrete works**				
2.1	50 mm thick mass Concrete on the floor slab	M^2	1		
2.2	RC Covering 100 mm thick concrete	M^3	0.32		
2.3	Grade beam C-25	M^3	0.15		
3	**Supply, cut and fix in position mild steel reinforcement bars**				
3.1	dia 6mm	Kg	10		
3.2	dia 10mm	Kg	36		
4	**Sawn form work**				
4.1	Covering slab and grade beam	M^2	6		
	Sub total				
5	**Brick Work**				
5.1	Supply and raise 350mm thick 0.5m high hard trachyte or equivalent stone masonry foundation wall bedded in cement mortar mix 1:3	M^3	1.2		
5.2	Filling with 400mm thick 5 - 7mm diameter l filter media as shown on the drawing or as directed by the Engineer	M^2	4		
5.3	Damp proof coat (DPC) Asphalt paint (2 coats) between the masonry foundation and the grade beam	M^2	2.25		
	Sub total				
6	**Miscellaneous Items**				
6.1	Combustion chamber with cap as shown in the drawing	Ls	1		
6.2	Metal sheet 2mm thick welded in to angle iron	No.	1		
6.3	Stone pavement around the incinerator 500mm wide	M^2	4		
	Sub total				
	Grand total				

Annex 4.4 Bill of Quantity for VIP Latrine for Placenta pit

I.N.	Description	Unit	Qty.	Unit price	Total Price
	D. Sub Structure				
1	**Site and Earth Work**				
1.1	Clearing of top soil (200mm)	M^2	7		
1.2	Excavation for strip foundation	M^3	20		
1.3	Cart away excavated material to a distance not exceeding 1km	M^3	10		
1.4	Provide and fill hard core with hard basaltic or equivalent stone, well compacted and blinded with crushed stone to a finished thickness of 25cm	M^3	1.8		
1.5	Ditto, but below 1.5 meters and not exceeding 3.5 meters	M^3	1.8		
	Sub total				
2	**Concrete works**				
2.1	Top covering slab- 200 mm thick concrete class C-20	M^3	1.2		
2.2	Top covering slab -100 mm thick concrete class c-20	M^3	0.2		
2.3	**Supply, cut and fix in position mild steel reinforcement bars**				
a	dia 6mm	Kg	20		
b	dia 10mm	Kg	99		
2.4	**Sawn form work**				
a	Top covering slab	M^2	5		
	Sub total				
3	**Masonry Work**				
3.1	Supply and raise stone masonry wall bedded in cement mortar mix 1:3	M^3	4.8		
3.2	Filling with 400mm thick 5 - 7mm diameter l filter media as shown on the drawing or as directed by the Engineer		-		
	Sub total				
4	**Miscellaneous**				
4.1	Dia.=80mm Galvanized steel vent pipe fixed on top of pvc vent cap with fly trap	M	2		
4.2	Checkered plate manhole cover 670x520x8mm with handle	No	1		
	Sub total				
	Grand total				