MINISTRY OF

PUBLIC WORKS AND TRANSPORT

NATION RELIGION KING

QUARTERLY PROGRESS REPORT-

SEPTEMBER-OCTOBER-NOVEMBER 2019

Project: Integrated Urban Environmental Management in the Tonle Sap Basin (RRP CAM 42285-013)

Package IV: NGO Support for Community Mobilization and Environment Improvement

Submitted to Ministry of Public Works and Transport - Government of Cambodia

padek artnership for Development in Kampuchea

in association with

WEST EAST DEVELOPMENT (CAMBODIA)

Consultancy and Development Partnership

Preface

This document is the Quarterly Progress Report prepared for the CMEI project's fifth quarter of operations (September-October-Nov 2019). The project continued to work on the committed deliverables.

The key achievement of the quarter is the continued coordination with other stakeholders and the visibility gained by the project. The team has toiled hard to come up with multiple sets of upgraded designs for the toilet. This was due to the close-knit coordination with the PMU, bank and the communities who continued to provide us with information.

The floods in Pursat affected the work for some time. The team has invested time in the growth of our understanding by conducting field visit to other project sites, attending sharing sessions on early warning systems for disasters. The trainings have continued in the field and the communities have continued to provide confidence to us.

The format of the report is revised from this quarter to focus specifically on the actions and the challenges. The information about the operational environmental and related factors has been minimised to keep the report concise and to the point.

Acknowledgements

This report would not have been possible without the generous contributions of time and expertise of many individuals and organisations. The team would like to express its sincere gratitude to all our partners in this collaborative effort. A number of individuals consulted during the preparation of this Report provided invaluable advice, information and material. The funding for this study came from the Ministry of Public Works and Transport, Govt. of Cambodia project funded by the Asian Development Bank.

Table of Contents

List of Maps

List of Tables

List of Abbreviations

ADB	Asian Development Bank;
ADPC	Asian Disaster Preparedness Committee;
ASEAN	The Association of Southeast Asian Nations
BBB	Building Back Better;
BER	Bid Evaluation Report
CAR	Climate change adaptation And Risk reduction;
CCA	Climate Change and Adaptation
CCDM	Commune Council Disaster Management;
CHF	Cambodian Humanitarian Forum;
CMEI	Community Mobilization and Environmental Improvements
DDR	Due Diligence Report
DMS	Detailed Measurement Survey
DRR	Disaster Risk Reduction
EGM	Effective Gender Mainstreaming;
EMP	Environmental Management Plan
GAP	Gender Action Plan;
GMS	The Greater Mekong Sub region
GOVT	Government
HH	Head Household;
HHP	Health and Hygiene Promotion
HVCA	Hazard Vulnerability Capacity Assessments;
ID	Identification Card;
IEC	Information, Education and Communication;

IEE	Initial Environmental Examination
IEIA	Initial Environmental Impact Assessment
IRC	Inter-ministerial Resettlement Committee,
KPCH	Kampong Chhnang;
LRRD	Linking Relief Recovery to Development.
MEAL	Monitoring Evaluation and Learning;
MEF	Ministry of Economy and Finance,
MOH	Ministry of Health;
MPWT	Ministry of Public Works and Transport;
MRD	Ministry Rural Development;
MTR	Mid Term Review
NCB	National Competitive Bidding;
NGO	Nongovernmental organizations,
O & M	Operation and Maintenance
ORS	Oral Rehydration Solution
PADEK	Partnership in Development in Kampuchea;
PAH	Project Affected Households
PAM	Project Administration Manual
PCC	Provincial coordination committee,
PD	Project Director
PDOWA	Provincial Department of Women's Affairs
PDPWT	Provincial Department of Public Works and Transport
PDRD	Provincial Development of Rural Department;
PIU	Project implementation unit,
PMIS	Project management and implementation support,
PMU	Project management unit,
PVCA	Participatory Vulnerability and Capacity Assessments;
RP	Resettlement Plan
SADD	Sex Age Disaggregated Data
SPS	Safeguard Policy Statement

TOR	Term of Reference;
TSUADF	The Tonle Sap Urban Areas Development Framework
UNDP	United Nations Development Program;
UNEP	United Nations Environment Program;
UNFCCC	United Nation Framework Convention on Climate Change
VDMG	Village Disaster Management Group;
VO	Variation Order;
WASH	Water, Sanitation and Hygiene;
WCCC	Women and Children's Consultative Committees;
WEDC	West East Development Cambodia;
WWTP	Waste Water Treatment Plan

ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន

Community Mobilization and Environmental Improvement **CMEI**

1. Background of the project –CMEI

- The CMEI project supported by MPWT and funded by ADB is being implemented across the vulnerable areas of Cambodia. The Project looks at the interconnections between infrastructure developments, urban management, water and climate change in Tonle Sap Region specifically in the two provinces of Pursat and Kampong Chhnang in Cambodia.
- The Ministry of Public Works and Transport and provincial departments of public works and transport of Kampong Chhnang and Pursat are wholly responsible for the implementation of ADB financed projects, as agreed jointly between the borrower and ADB, and in accordance with Government and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by Ministry of Public Works and Transport and provincial departments of public works and transport of Kampong Chhnang and Pursat of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.
- The agencies PADEK and WEDC have been awarded the project output: CMEI under the project titled "Integrated Urban Environmental Management in Tonle Sap Basin" This is part of a larger mandate to help develop the Tonle Sap basin. CMEI's output is working to translate Project principles into community action. This includes support for community planning and prioritization, and provision of community-driven climate-resilient urban environmental infrastructure. The involvement of local communities, including poor, vulnerable and ethnic Cham and Vietnamese, in planning, decision-making and supervision of the works will encourage local solutions and greater accountability of the services delivered. It will help to create ownership and provide benefits to those often marginalized and vulnerable.

2.1 Project Outputs and Outcomes

- The project aims to address the climate change and environmental needs of the urban poor and vulnerable, including ethnic Cham and Vietnamese in Kampong Chhnang and Pursat—making the project more inclusive by extending benefits from large infrastructure investments.
- It includes improved household sanitation for ID Poor 1 and 2 in the current municipality area; climate change and hygiene awareness and action; and community small-scale infrastructure improvements in pre-identified poor and vulnerable areas in each municipality. Small-scale infrastructure improvements will be prioritized by the communities and will be financed by the project, national government, and community. The output will help extend project benefits to the poor and vulnerable groups.
- The output includes the following sub-outputs and activities:
    a. Household sanitation grants for ID Poor 1 and ID Poor 2 households within the defined municipality area).
    b. Information, Education and Communication (IEC) activities to promote project awareness, hygiene awareness, initiate behavioural change and disseminate climate change information to men and women. The project area for the IEC efforts will include Sangkats in the existing municipal boundary and adjacent urban Sangkats. It will

generate information and opportunities for knowledge management to further strengthen the knowledge management aspects of the project; and,

c. Small-scale infrastructure improvements in Sangkats that are pre-identified by the project survey as being poor and vulnerable to poor urban environmental conditions (e.g., community sanitation, improved drainage with access roads, or community collection points for solid waste management). These components will connect directly with Output 1 and 2 investments to ensure that local communities are also direct beneficiaries. Communities residing in the urban Sangkats of the existing municipal boundary area will be eligible for assistance.

2.2 Key benchmarks for project implementation

a) Address the climate change and environmental needs of the urban poor and vulnerable, including ethnic Cham and Vietnamese in Kampong Chhnang and Pursat.
b) Making the project more inclusive by extending benefits from large infrastructure investments.
c) Improved household sanitation for ID Poor 1 and 2 in the current targeted municipality areas; climate change and hygiene awareness and actions;
d) Small-scale infrastructure improvements prioritized by the communities and financed by the project, national government, and community.
e) Help extend project benefits to the poor and vulnerable group by the end of project period.

2.3 CMEI Approach

- The project has adopted an integrated WASH approach covering the following key action agendas:

a) supports effective processes to manage water and sanitation systems assisting in establishment of Water Trust Funds, Drinking Water Users Associations and local networks of stakeholders, as well as help in the development of Water Safety Plans,
b) supports various abovementioned stakeholders in constructing and managing water and sanitation systems in project target villages; and
c) Ensures a civil society and govt. collaborative monitoring mechanism is in place at urban municipal level so that consumers, operators and other stakeholders can hold a constructive dialogue over management in water consumption area.

2. Operational Geography: Kampong Chhnang & Pursat Provinces

- The project is being implemented in the Tonle Sap Lake Basin geography. The Tonle Sap is the largest body of water in Cambodia ebbs and flows depending on the time of year. The Sangkats of operation of CMEI have been pre-identified for inclusion in the small-scale infrastructure improvements.

- The project covers 2 provinces

Table 1: Operational geographical details

S.No	Geography- Province	Focus areas	Focus Areas
1.	**Kampong Chhnang Municipality** (Total 7,928 households or 40,360 people. Covers 26 villages in 4 Sangkats)	Kampong Chhnang Town	Samrong village, Chong Kosh village and Kandal village.
2.	**Pursat Municipality** (Total 13,314 households or 63,773 people. Covers 66 villages in 7 Sangkats)	Pursat Town	Kbal Hong village, Toul Makak village and Kos village

- Based on the evolving operational environment, the villages might change in consultation with the other components of the project and the MPWT. For each additional community, detailed needs assessment will be carried out and submitted to the MPWT.

Table 2: Geolocation of the operational villages

Province	Commune	Village	Latitude	Longitude
Pursat	Pursat	Kbal Hong	12°32'53.86"N	103°55'10.27"E
Pursat	Roleab	Toul Makak	12°30'24.69"N	103°57'40.42"E
Pursat	Lo Lork Sar	Kos	12°30'17.39"N	103°53'52.82"E
Kampong Chhnang	Phsar Chhnang	Samrong	12°15'31.92"N	104°40'29.63"E
Kampong Chhnang	Phsar Chhnang	Chong Kosh	12°16'16.82"N	104°40'35.31"E
Kampong Chhnang	Phsar Chhnang	Kandal	12°15'57.13"N	104°41'5.74"E

Map 1: Map of the operational areas

ក្រសួងសាធារណការ និង ដឹកជញ្ជូន
MINISTRY OF PUBLIC WORKS AND TRANSPORT

ADB
ASIAN DEVELOPMENT BANK

ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន
Community Mobilization and Environmental Improvement
CMEI

padek
Partnership for Development in Kampuchea

WEST EAST DEVELOPMENT (CAMBODIA)
Consultancy and Development Partnership

3. Progress Update of Key Activities

3.1 Current situation

- **Pursat** suffered floods in the middle of September 2019 and hence the communities were in need of support, which was provided to them through the coordinated efforts of the CMEI team with others. The project as such does not have any response centric funding but we do connect the needy with the other stakeholders in the geography.
- **Kampong Channang Embankment:** the ground situation is until uncertain with no finalisation yet on the issues of the embankment. The project has continued to liaise with the communities but the questions remain about the continuation of the committed activities

- The operational realities remain the same in both the provinces
- Based on the discussions with the ADB, PMU and PMIS TL, it was agreed that the small sanitation action will be the major activity set for the next phase – there will an inclusion of solid waste management activities (community based) into the project actions.We have prepared alternative sanitation solutions for two of the villages in Pursat (which have land tenure). We will prepare communal solutions for those villages without land tenure (Kampong Chhnang) and for the remaining village in Pursat without land tenure. This latter village will be incorporated into the network sewer infrastructure to be built by the other project. In line with this update, we have started with the consolidation of the needed actions in both the provinces.
    a) **Pursat- Low cost toilet solution:** The low cost toilet solution would only be for the 2 rural villages in Pursat which included Kosh and Toul Makak.
    b) **Pursat- Kbal Hong:** For the village of Kbal Hong in which the households have settled along the irrigation canal, we still have to see how they can be connected to the drainage system.
    We still do not have a formal approval of the PA and the owner of the canal that they agree with connecting these houses to the drainage system. It was only mentioned in a meeting that this should be or look like a temporary solution not a permanent one.

We have now collected Intensive data of the beneficiaries.

c) **Kampong Channang :** The action is delayed, the next steps will be dependent on the final decision on the embankment. If the embankment is cancelled and replaced by a sewerage system than these villages have to the extent possible be integrated in the sewerage system, either connected to the main system or decentralized solutions but part of the overall investment.

3.2 WASH Assessments

- The team undertook a series of water and sanitation assessment in current implementation phase (see annex). The key objectives of the assessment were:
    a. In order to understand the Key WASH needs of the communities and help design the project actions on WASH and any other emerging needs .
    b. The focus of the visit to understand the needs around the sanitation and the effective and time bound ways of disbursing the sanitation grants to the needy ID poor communities
- This action aided the project in attaining :
    a. Informed understanding of the field geography and the needs of the community
    b. Discussions with the project communities on the public health and WASH needs
    c. Technical solutions for the needs expressed by the project communities
    d. Realistic BoQ, budget, Materials Availability and timelines along with detailed reporting on the O&M (operations and Maintenance) of the technical solutions after the project implementation period
    e. A status check on the community contribution on the proposed actions

3.3 Toilet Designs – upgrades

- The toilet designs shared earlier are being modified currently to bring down the costs. We have consulted with a series of designs and implementation methodology practiced in Cambodia for this initiative. We are confident that the toilet design will be a cost effective one.
- These designs were also shared with the TL of PMIS for his comments and inputs.
- This is an individual household latrine design. We have consulted with the MPWT team on this as well. We have tried to keep the costs low and the design is upgraded to the two-pit type to expand the longitivity. The feedback from the ADB on the last designs have been taken into account. We have provided both single pit and double pit designs as well as designs for the garbage bins.
- The TL shared the revised BOQ and Design from the Civil Engineer with the PMU on 16th October 2019. This is inline with the ADB suggestions for revisions and cost reduction. The revised designs covered the wood column, concrete rebar and varying elevation models. (detailed annex provided on 3 times revisions till 25 Nov 20219)

(a) TOILET CONCRETE: W=1.5M,L=2.0M- Design by Wood column
(b) TOILET CONCRETE: W=1.5M,L=2.0M- Design by Concrete rebar
(c) TYPE I: TOILET CONCRETE: W=1.6M,L=1.6M,H:3.5m
(d) TYPE I: TOILET CONCRETE: W=1.6M,L=1.6M,H:1.0m

Please see the annex for the multiple version of the changes proposed and delivered

3.4 Community Based Sanitation Solution- Kampong Channang

- During the mission, we discussed the possibilities of implementing a community based sanitation solution for Kampong Chhanng. In line with this intent, CMEI project looked for a pagoda or a community institution in each of the three villages. We consider the following:
    a. Do they have land

b. Do they own the land
c. Can they provide land for a community toilet set

- We are currently working on our proposal to cover:
  a. The pagoda or any other community institution (like a hospital/ school/ etc.) will provide land for the construction (based on an agreement)
  b. We want to build a community level toilet infrastructure which will include a 'paid service model.
  c. The structure will include a set of gender-segregated toilet, bathing and washing facilities with water support.
  d. The community will have the option of using the sanitation facility on a payment basis
  e. There will be lighting support for access in early and late hours
  f. The project will create a user group for the maintenance of the assets
  g. The operator will be selected based on a competitive selection procedure in coordination with the provincial authorities, CMEI and MPWT
  h. The operator will be responsible for the maintenance of the structure and cleanliness actions
  i. The operator can also have a small shop at the premises which adds to the revenue and also provides for the community with a space to mingle and socialize.

  Based on the above thought process, the CMEI team discussed with village chief at the Chong Kosh village Kandal village and Saroang village. They were asked if they can provide land for a community toilet set. (Detailed annex)
- As of now we have the following:

a) Samroan Village land in Samroan School(នៅក្នុងសាលារៀនសំរោង(
b) Kandal Village land near Salabun(ជិតសាលាបុណ្យភូមិ(
c) Chong Kosh Village land we have three option place at Phnom Yoang Chong
d) Kosh 2 Land (មានពីកន្លែងម្ចាស់ដីផ្សេងគ្នាតែនៅម្តុំភ្នំយោងដូចគ្នាក្នុងភូមិចុងកោះ(
e) 1 place at near school in community Eslam(សាលារៀនសហគមន៍ ជនជាតិឥស្លាម (

3.5 Mid Term Review - Mid-Term Review Mission

- An ADB loan midterm review mission (the Mission) was fielded to Cambodia on three occasion from 23-28 May 2019 (and follow up in 21-26 July 2019 and 3-5 September 2019)[1]
- The objectives of the Mission were to:
  - (i) discuss the potential major change in scope due to the cancellation of the Kampong Chhnang Embankment Package;
  - (ii) propose new or changes to existing procurement packages as replacement/s for the cancelled embankment package;
  - (iii) review the progress of project implementation activities;
  - (iv) agree on minor changes to three loan covenants concerning the landfill contract award;
  - (v) revise CAD projections and other project administration documents;
  - (vi) confirm details on loan and grant extensions;
  - (vii) simplify the loan/grant cost categories;
  - (viii) collect data and information to proceed for economic and financial reevaluation

[1] The mission comprised of Alexander Nash, Urban Development Specialist, SEUW; Javier Coloma Brotons, Urban Development Specialist (Water Supply and Sanitation), SEUW; Virginia E. Villanueva, Project Analyst, SEUW; Rangina Nazrieva, Social Development Specialist (Resettlement), CARM; Sethy Sour, Environmental Specialist (Safeguards), CARM; and Chandy Chea, Gender Officer, CARM.

of the project;
  - (ix) undertake review of project safeguards; and
  - (x) review implementation and update of GAP. The Mission discussed the actions and next steps required to complete the midterm review of the project.
- Meetings to discuss the procurement packages (both the existing packages and possible replacements for the Kampong Chhnang Embankment) were conducted with the Executing Agency (EA), the Ministry of Public Works and Transport.
- The Mission also traveled to Kampong Chhnang and Pursat to visit project sites and meet with provincial government officials and the project implementation units (PIUs).
- The wrap-up meeting was held in Phnom Penh on 29 May 2019.
- The TL was actively engaged in the whole mission
- Two follow-up missions[2] were conducted in July and September 2019 to resolve outstanding issues on the Kampong Chhnang Embankment. The outcome of those missions and discussions is included in this MoU.

3.6 CW-09: Kampong Chhnang and Pursat Community Driven Improvements

- **Current Status**. The DED for CW09 were prepared by the NGO Padek and submitted to ADB in on the 9 December 2018. The difficult geographical situation of the marginalized villages meant that the infrastructure solutions were expensive and the target number of beneficiaries (5,200) could not be achieved3 with the budget ($2.48 million). The solution proposed was a permanent concrete structure on land that the beneficiaries often do not have title to, posing a problem for MPWT to construct. ABD's comments on the DED were issued on 4 February 2019. On 12 July 2019 a Variation Order was approved for package CS04 to use $95,000 of the contingency budget to keep the consultant mobilized while the DED is revised4.
- The Mission discussed various options for the communities targeted by package CW09, given the non-viability of the designs for most beneficiaries. It was agreed that densely settled informal communities with no land tenure will require a specific communal (i.e. shallow network) solution that does not build significant infrastructure on public land, nor grant de-facto ("soft") land tenure. The infrastructure should have a light footprint and be of a public nature which does not create private claims to land via individualized boundary boxes (for example).
- It was agreed with the Provincial Governor and Mayor of Pursat that houses with no land title on public land could "self-connect" to a public sewer access point, under guidance and support from the NGO, with the understanding that the solution on offer was temporary. This solution would be applied to 1 of the 3 villages in Pursat. The two (2) sparsely populated villages (in Pursat only) can use the existing solutions developed by the NGO because on-site solutions are lower cost and the beneficiaries have land tenure.
- Kampong Chhnang does not yet have a formal (networked) wastewater collection system and so onsite or decentralized solutions are the only options in the short-term. It was agreed that PADEK would investigate a decentralized collective solution which would lower unit costs and overcome the land-tenure issue, for Kampong Chhnang. The feasibility of this will be

[2] 21 July – 1 August 2019 and 3 – 6 September 2019.
[3] In fact, only about 700 households could be served with the proposed solution
[4] The embankment delays (CW04) have had a knock-on effect on the community driven contract and resulted in an equivalent delay, as one of the target villages contained some of the households relocated by the Provincial Government

investigated in collaboration with the Provincial Government and GDR (for land acquisition, if required).

- It was also agreed that PADEK's scope would be increased to include some solid waste management activities, particularly the inclusion of existing waste pickers, in a subsequent variation order.
- CW09 is currently divided into 6 lots in the disclosed procurement plan. Given the small size of each lot and considerable repetition between them, it is proposed to rationalize the 6 lots back into a single contract.
- **Environmental Approvals**. This package does not currently require an EIA as it consists of individualized on-site solutions. However, if a collective decentralized solution is adopted, an EIA would be necessary.
- **Land Acquisition and Resettlement.** Package CW09 currently has no land acquisition or resettlement issues as the investments were all on-site solutions (ignoring land tenure issues). However, if a collective solution is implemented for any village then land will need to be acquired for the collective treatment system, and potentially also for networks where these cannot be placed in a public right of way. The updated DED for the package will identify land acquisition and safeguard planning requirements.
- **Package CW09 conclusion**. The DED developed by the NGO can be implemented for two of the villages in Pursat only. For the other sites, the package will be redesigned as collective systems to be connected to the pubic sewer (in Pursat), or a decentralized system (in Kampong Chhnang), where land is available.
- In the absence of available land for a decentralized solution, the CW09 package will propose household drinking water treatment (i.e. disinfection), hygiene promotion, solid waste collection and community sanitation investments (e.g. school, temple or mosque-based on-site solutions, where land tenue, ownership and maintenance are secured).

3.7 Field Visit to Kandal - Sanitation in Challenging Environments (SCE) Network Forum

- The Team attended the Sanitation in Challenging Environments Field trip on 22 October 2021.
- The Purpose of the exercise was to bring together stakeholders who have an interest in addressing Sanitation in Challenging Environments (SCE) within Cambodia. The purpose was also to showcase a prototype of a new sanitation product co-designed by Engineers Without Borders Australia and iDE. The sanitation product has been designed for areas with high clay content in the soil and high groundwater areas.
- The event was organised by iDE Cambodia moving into the second year of Sanitation Marketing Scale-Up 3 (SMSU3) program. The event covered 3 key components:
    a) fecal sludge management (FSM) sanitation marketing,
    b) targeted subsidy implementation, and
    c) data-driven Open Defecation Free development.
- The learning event was attended by the TL and our team members (Mr. Phally and Mr. Voeun). The Cambodia's 13th Sanitation in Challenging Environments (SCE) Forum was conducted as an interaction meeting and a field trip to Kandal Province. The field trip was to observe and learn about a new sanitation product for high clay content in soil and high groundwater areas has been co-designed by Engineers Without Borders Australia and iDE. 15 prototype products have been installed in Kandal Province and will be tested for 12 months. During this field trip we had the opportunity to learn about the product and visit one of the prototype. The SCE Forum Field Trips are an opportunity to see and learn about some of the challenging environment areas and the sanitation solutions that are being developed for these areas. (Details are annexed)

3.8 EWS-1294-National Workshop

- The team attended the national workshop on Early Warning system organized by the INGO-People In Need, UNDP and NCDM. The TL – Dr. Dipankar and Mr. Phally attended this. The workshop aided in the development of the overall understanding on issues of DRR and Resilience building.

- The key objectives of the EWS 1294 National Sharing Workshop included:

(a) To present EWS1294 as Cambodia's National Early Warning System,
(b) Raise awareness about EWS 1294 in Cambodia.
(c) Inform about this year's performance of EWS1294, number of warnings disseminated and people reached.
(d) Share plan for EWS1294 improvements in the future.
(e) Ask for recommendations from relevant DRR Stakeholders.

3.9 Upcoming ADB-Mission-Cambodia-04-08Nov2019

- The expectation from the review mission was the solution of the embankment situation in KPCH. However, we did not see that happen. Bringing the embankment back in to compliance will be a long drawn action and hence it is important to bring the present duration of the PADEK contract to the attention of the mission and also that approval of a contract variation that will include a change in scope of the services and additional cost, will take at least 3 month.

3.10 V0-2 Preparations

- We have started the works for the VO-02 keeping in mind the need for actions to be upscale. This is also based on the understanding gained in the last VO-01 exercise. The whole process takes close to one implementation Quarter and hence it is important to plan.
- We are work with the following rationale based on the two options given below.
- **Option 01: we apply for a longer-term (12-month) time line with the following actions**
  1) the latrine constructions in two villages of Pursat,
  2) conduct meaningful pre and post hygiene training and awareness drives for the beneficiaries in all 6 villages of both provinces
  3) continual water sanitation and hygiene (WASH) surveillance and monitoring for the operational geography in both the provinces
  4) finalise the designs for the community sanitation facilities in Kampong Chhnang and get then approved followed by …
  5) the actual construction of the community sanitation facilities in Kampong Chhnang
  6) support the PMIS team for the network sewer linkages in the one village of Pursat (along the canal)

- **Option 02: we undertake a shorter term VO (6 months) where we will work on**
  1) the latrine constructions in two villages of Pursat,
  2) conduct meaningful pre and post hygiene training for the beneficiaries in both provinces
  3) continual water sanitation and hygiene (WASH) surveillance and monitoring for the operational geography

4) finalise the designs for the community sanitation facilities in Kampong Chhnang and get theses approved

3.11 New staff on boarding

- In the month of October 2019, we inducted two new staff as per the approval attained in the VO-01 of July 20219.

a) **Replacement of PC in Kampong Channang:** The PC for Kampong Chhnang Ms. Sak Mom (Provincial Project Coordinator for Kampong Chhnang) had resigned from the project on 30 June 2019 as she found a better employment opportunity with a longer tenure. She was replaced by Ms. Mao Chakriya who started from the second week of October 2019. We have recruited her as she comes with similar skills with the outgoing candidate (details in the table given below). She has worked for a long time with multiple community driven Disaster Risk Reduction and Gender inclusive Programmes.

b) **Civil Engineer:** In line with the approved VO-01, the project CMEI has now recruited a civil engineer for the operations. The candidate is Mr. Vouen Veth- a qualified Civil engineer. The candidate has expertise in Water and Sanitation projects in rural and peri urban areas. He has worked with Community level engineering actions with exposure to joint management of construction processes (details in annexes).

3.12 Support for IEC content

- In early September, the gender focal of the ADB resident mission was approached for the support for IEC to be produced by the CMEI project. Ms. Pisey chan was contacted for this purpose. She suggested that she doesn't have any inputs and asked us to continue with our efforts. The TL informed that we will continue to keep her in the loop in this connection.
- Similar efforts were also attempted with the Cambodia WATSAN Community members. The TL explored if there are IEC materials which can be used by CMEI project in the operational areas. We are focused on the following topics:
    a. Menstrual hygiene and solid waste management,
    b. Use of environmental friendly materials
- We are keen to reprint/ adapt the existing materials with due acknowledgement and credits to the agency sharing the materials. We will also be keen to disseminate existing posters on topics of Public Health Management, Solid Waste Management, WASH from the community members in the field. We will add a CMEI stamp and also share the photos of the actions to the respective agencies.

3.13 Information Sharing and Communications

- The team is currently engaged in information sharing and collection of case story from the communities. We have prepared the following document for the action:

a) **Consent Form:** for every close photo of an individual/ family from the point of view of communications. We use this for the case stories and other reporting actions, seeking consent prior to the action is an act and affirmation of transparency and accountability.

b) **Case Stories:** The idea of the case stories is to ensure that the field realities and actions are well documented from time to time and informed to the donors and wider stakeholders.

- It is important to get information about the past situation (before the project), current situation (focus on our current support- trainings etc.) and future needs (small scale sanitation, solid waste management) ,

Key Questions to answer in every case story:

a. What's your situation now
b. What's your income and occupation

c. How many members are in your family
d. What are the disasters that affect your annually
e. What are the safeguards that you currently have at the household level
f. What safety measures are available in your commune level
g. What are your current needs on Water Sanitation and Hygiene – water, storage, access, toilet,
h. Are you seeing/ experiencing any Climate related Changes?
i. Are there any children specific needs
j. What support have you received from the CMEI project (this is a critical part and the content should be heavy on this part)
k. What are your expectations from the CMEI project (focus on Solid waste Management and Sanitation needs linked to public health)
l. What support or part are you willing to play for the better implementation of the CMEI project.

3.14 Coordination Actions

- **MPWT:** The CMEI has continually coordinated with the MPWT team in the current implementation phase. We have sought the advice and guidance from the MPWT Team who have obliged with suggestions through changes of field activities intervention linked to the timeframe, especially for the extension of VO for field staff to implement their field works. The CMEI team also reported about the achievements, challenges, issues and gaps for improvement of project implementation, especially the reasons of delay for field project implementation to the MPWT team and discussed together about that for finding out the appropriate solutions to improve the project fields activities implementation together.

- **Coordination with Stakeholders:** The project has held continual meetings with other components team for enhanced coordination and collaboration. The project team has completed a core analysis of the key Stakeholders in the target geography along with the detailed assessments in the field. The detailed stakeholder mapping was provided in the Inception Report. Coordination meetings with key officials in provinces further compliment this - provincial project office and administration staff, which are in being held continually in the field and Phnom Penh level. The key meetings with other agencies and stakeholders at the national level included: Oxfam, Cambodia Humanitarian Forum, Save the Children, People in Need, Red Cross
- Several development partners are actively engaged in addressing climate risks in Cambodia. Key donors include the Governments of Australia, Denmark, the European Community, France, and Japan. Multilateral institutions such as the World Bank Group, the Asian Development Bank (ADB), the United Nations Development Program (UNDP), the United Nations Environment Program (UNEP) and others are involved in several projects with implications for climate change adaptation and disaster risk reduction.

- **Coordination with PMIS:** The CMEI project has continued to coordinate with the PMIS team from the inception stage. The key actions that will be progressively implemented with mutual consensus include:
    a) Sharing of progress report on a regular basis
    b) Periodic meeting between the team leaders of the CMEI and the PMIS teams
    c) **Collaboration on beneficiary databases:** The teams have worked with each other on the need for parity of data management actions
    d) **Information management:** collective information management and collection of information in pre agreed manner

e) use of digital data gathering solutions with spatial referencing (mobile handheld devices)
f) development of a joint information management system
g) Field based coordination: field staff will be connected to each other at the coordinator level, continual information sharing to complement our actions in the field incl. community level meetings
h) **Capacity Building plan:** Joint training of teams in information collection and Capacity building plan for the provincial authorities

4. Gender and Social Inclusion Plan

- The project is focusing on Women in a major way, targeting the female-headed households within the ID Poor 1 and 2 to ensure better delivery of the CMEI project and also the development of the project documentation for the Sanitation grants. The operational areas is a predominantly agrarian patriarchal society setup.
- The project has continually and meaningfully engaged in consultations with women in Kampong Chhnang and Pursat. This has helped in prioritizing the needs of the women in small-scale infrastructure improvements (e.g., gender-specific requirements for public infrastructure, such as separate latrines for women with trash bins, if appropriate). The project is making all efforts to ensure at least 40% of participants in CMEI activities and training are women. The thrust as informed by the inception stage will be on hygiene IEC campaigns covers topics focused on women (e.g., at least 30% of hygiene campaigns focus on menstrual hygiene and solid waste management) to be prioritized.
- The CMEI has consulted the PMIS team on the community profile along with the extensive field level outreach actions. The Project is classified as 'Effective Gender Mainstreaming' (EGM) under the Asian Development Bank's (ADB) guidelines (March 2010). The Project impact is increased economic activities and environmental protection in towns in the Tonle Sap Basin and the outcome of the project will be improved urban services and enhanced climate change resilience in Kampong Chhnang and Pursat municipalities.
- The ADB mission noted the Quarterly Report prepared by the PMU includes updates on the implementation of the Gender Action Plan (GAP), however data for a number of indicators is missing and for others is not yet available as construction has not started. The CARM gender expert met with the PMIS during the mission and will coordinated to update the GAP with available data. The GAP targets for female representation in the USUs was re-iterated during the mission.
- The CMEI Gender Action Plan (GAP) has been prepared in accordance with ADB's Policy on Gender and Development (1998), ADB Operations Manual Section C2/BP (2010) Gender and Development in ADB Operations, the Government's goal to strengthen the role and social status of women through capacity building for women in all sectors, changing discriminatory social attitudes, and safeguarding women's rights to actively and equally participate in nation building as well as in coordination with the other components under the larger project.

- The GAP was updated in consultation with ADB gender focal and submitted on 9th August 2019 and is given below.

Output 3: Community Mobilization and Environmental Improvement (CMEI)		
Sanitation grants to IDPoor 1 and 2, including female-headed households if categorized as IDPoor 1 or IDPoor 2. **Action 13:**	• The selection of IDPoor 1 and 2 for providing the toilet constructions has already included the female-headed households for sanitation grants project.	
Meaningfully consultations with women in Kampong Chhnang and Pursat on priority small scale infrastructure improvements (e.g., gender-specific requirements for public infrastructure, such as separate latrines for women with trash bins, if appropriate). **Action 14:**	• The process of design for CMEI Project and the toilet constructions design for both provinces in Kampong Chhnang and Pursat were consulted with women and prioritized to the women needs, accessibility and privacy as well as use. • The current design is of individual household type. • The public infrastructure will be designed will to meet the MRD minimum standard for the toilets. • These public infra actions will cover the needs of separate units for women and men along with the provisions of trash bins inside the toilets for managing the women menstrual hygiene management needs as well as needs, accessibility and privacy.	• This action is yet to be approved under the small scale sanitation grants. • Once approved, these committed actions will implemented. • This is subject to the agreement with the provincial authorities and stakeholder groups on O&M • Most of the ground work is complete
At least 40% of participants in CMEI activities and training are women **Target 1:**	• The Project has conducted trainings topics of Health and Hygiene Promotion, Hazard Vulnerability Capacity Assessment/ participatory vulnerability capacity assessment, Disaster Risk Reduction and Climate Change Adaptation. • A total of 350 vulnerable community members have been trained. • Of the participants, 61% were women (215), 13% were elders (45), 8% were students (27) and 7% were specially abled (7 physically challenged). • The process of design and implementation for CMEI Project is ensuring active women's participation in the target communities and schools in close collaboration and	

	coordination with PIU and PDOWA, WCCCs as well as NGOs who implement WASH activities in the operational Geography.	
Hygiene IEC campaigns covers topics that are important for women (e.g., at least 30% of hygiene campaigns focus on menstrual hygiene and solid waste management). **Target 2:**	• The CMEI Project will cover this need in the Hygiene IEC campaigns covers topics ensuring women specific needs. • This action will prioritize, at least 50% of menstrual hygiene and solid waste management topics along with the training actions.	• This action is yet to be approved under the small-scale sanitation grants. • Once approved, these committed actions will implemented. • Most of the ground work is complete
Capacity development and IEC materials will be gender-sensitive. **Action 15:**	• The IEC designed as been consulted with the WASH group in Cambodia and we are in close consultation with the Gender team of the ADB to make the IEC ever more gender sensitive. • This is a continual action.	

- The Gender Action Plan includes specific gender actions to help ensure men and women actively participate in project activities, receive project information, and have access to opportunities during project implementation. In this report the performance indicators/targets of the plan as presented in the PAM have been reformulated based on the SMART criteria to be able to more accurately measure the level of achievement
    a. The gender action plan (GAP) will support the implementation of gender-related decisions and mandates in the CMEI process, which may include priority areas, key activities and indicators, timelines for implementation, responsible and key actors and indicative resource requirements for each activity, and to further elaborate its review and monitoring processes.
    b. The GAP seeks to advance women's full, equal and meaningful participation and promote gender-responsive climate policy and the mainstreaming of a gender perspective in the implementation of the CMEI project
    c. Gender-responsive climate policy requires further strengthening in all activities concerning adaptation, mitigation and related means of implementation (finance, technology development and transfer, and capacity building) as well as decision-making on the implementation of climate policies (UNFCCC).
    d. The GAP recognizes that gender-related action is being progressed across all areas of the project and with respect to the ADB gender guidelines.
    e. The GAP seeks to enhance the understanding and expertise of stakeholders on the systematic integration of gender considerations and the application of such understanding and expertise in the thematic areas under the CMEI project action.
    f. The GAP aims to ensure the respect, promotion and consideration of gender equality and the empowerment of women in the implementation of the project action.
- Women are increasingly seen as taking upon themselves more visible roles in community development, participating in all levels of community social affairs in central and local governments. This has been seen particularly in their participation in commune councils and in the community decision-making process. There is a need to ensure that the project is implemented in a systematic manner with a participatory approach experience gained during the project's implementation, they are now prepared and backed.

5. Risks, Opportunities, Barriers and key challenges

- Given the urgency of the action, CMEI team prioritised the small scale mitigation action over the CMEI project deliverables as this support is meant to compliment the CMEI components. The assessment and the subsequent development of the proposed action took substantial amount of time of the CMEI team and this meant that the committed timeline on the approved budget has been prolonged. Moreover, the community too is getting restive about the delays which is bound to affect the other actions when implemented.
- CMEI has identified **barriers to implementation** of adaptation measures. These include:
  - Inadequate technical, financial, and institutional capacity of government agencies and of local communities for dealing with climate hazards, as well as limited coordination among the agencies and communities;
  - Limited integration of climate change issues into national policies and programs; and
  - Limited awareness of climate change issues.
  - Climate change may bring not only negative impacts but also new economic opportunities, but the lack of available information and measures to identify these opportunities hampers the country's ability to respond to a changing climate environment. Addressing the gaps identified below is central to placing Cambodia on the course of successful adaptation to climate change.
  - A better understanding of the local dimensions of vulnerability is essential for developing appropriate adaptation measures that will mitigate any adverse consequences. This requires detailed vulnerability assessments to be conducted in the most vulnerable communities.
  - Flood forecasting and communication systems are weak and should be improved in those areas that are heavily affected by floods. Feasibility studies for early warning systems are central to this goal, particularly at the province and community level.
  - There is a growing demand for detailed accounts of local adaptation to climate change to serve as a starting point for knowledge exchange on successful practices among vulnerable populations and to support rational policymaking in vulnerable areas.
  - Mainstreaming disaster risk management into planning and administration requires further research on appropriate mechanisms for mainstreaming at the administrative level, including studies on the differential effects of climate variability and change on disaster vulnerability, including shifting rainfall patterns.
  - Additional research is required to properly evaluate the impacts of a changing climate on crop yields under various management scenarios.
  - Accurate and reliable local forecasts of extreme climate events are non-existent. Villagers in downstream areas essentially rely on word of mouth from upstream areas to ready themselves for floods. Observation and forecasting systems need to be installed where appropriate.
  - Meteorological information for Cambodia is sparse, and a country-wide network of hydro meteorological stations needs to be established in order to quantify long-term changes in climate, including benchmarking future climate variability and change.
  - Comprehensive vulnerability maps identifying the locations of high vulnerability could support disaster planners in preparing communities for worse case impacts as well as help local communities take an active role in identifying appropriate response mechanisms.
  - The use of existing meteorological information is limited to specific agencies, and this information needs to be tailored to decision makers across a wider range of sectors, including water resources management.
  - ***The list of ID poor in some villages are different between the information from the Provincial Department of Planning;***

- Mobilization of Vietnamese ID poor I and II from Kandal to Chong Kosh village;
- The areas in Kandal and Chong Kosh villages in Kampong Chhnang province are not accessible by motorcycle because of flood and hence have proved to be very difficult for project activities implementation.

- It is evident from the above challenges that a sustained commitment is needed at the field level. The project CMEI is aware of this and the field staff are being continually motivated and trained. These efforts have already been initiated and will lead to better coordination and planning ensuring more robust implementation.

End of Document

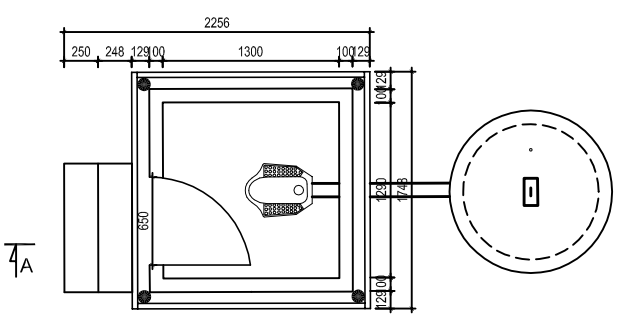
Contact us:

PADEK: 72, St 360, Phnom Penh 554, Cambodia

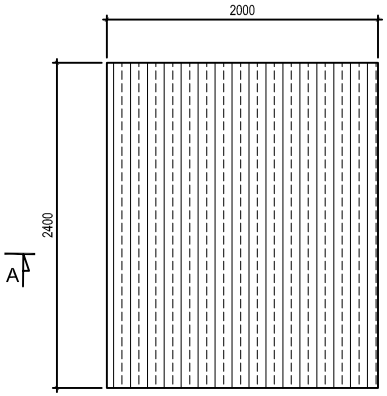
Ph: +855 23 216 224

Website: http://padek.org/

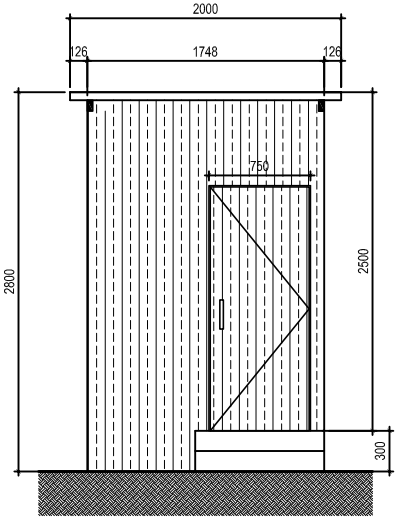
BOQ and Cost Estimation Toilet to Building at Pursat Province								
TOILET CONSTRUCTION BY WOOD AND CONCRETE: 1.5Mx1.5M								
No.	DESCRIPTION WORK	UNIT	QUANTITY	UNIT PRICE ($)	TOTAL ($)	Number of toilet	Total Quantity	TOTAL ($)
1	ផ្គត់ផ្គង់លូកងរ/ Supply ring concrete (Diameter = 1m)	Number	3.00	9.00	27.00	1	3.00	$ 27.00
2	ផ្គត់ផ្គង់គំរបលូមូល/Supply cover ring concrete(Diameter:1.0m)	Number	1.00	6.00	6.00	1	1.00	$ 6.00
3	ផ្គត់ផ្គង់ដែកថ្នាំងអំពៅ/ Supply deform bar (SD10)	KG	15.00	1.20	18.00	1	15.00	$ 18.00
4	ផ្គត់ផ្គង់លួសចំណង/ Suplly Wire connection	KG	2.00	1.20	2.40	1	2.00	$ 2.40
5	ផ្គត់ផ្គង់ស៊ីម៉ង់/ Supply cement (K-Cement)	Package	12.00	6.00	72.00	1	12.00	$ 72.00
6	ផ្គត់ផ្គង់ឥដ្ឋប្រហោង/ Supply Hollow brick	Number	1,300.00	0.07	84.50	1	1,300.00	$ 84.50
7	ផ្គត់ផ្គង់ខ្សាច់/ Supply Sand	M3	3.11	10.00	31.13	1	3.11	$ 31.13
8	ផ្គត់ផ្គង់ថ្មចាក់បេតុង/ Supply Aggregate	M3	0.68	25.00	16.90	1	0.68	$ 16.90
9	ផ្គត់ផ្គង់ការ៉ូដញ្ជាំង/ Supply Wall Tile (30x60)	Box	2.00	7.00	14.00	1	2.00	$ 14.00
10	ផ្គត់ផ្គង់ការ៉ូបាត/ Supply Floor Tile (30x30)	Box	2.00	6.00	12.00	1	2.00	$ 12.00
11	ផ្គត់ផ្គង់ចាន់បង្គន់/ Supply toilet or unrin	Number	1.00	12.00	12.00	1	1.00	$ 12.00
12	ផ្គត់ផ្គង់សសរមូល/ Supply wood column (Diameter = 1m, Length = 5m)	Number	4.00	13.00	52.00	1	4.00	$ 52.00
13	ផ្គត់ផ្គង់ឈើ៤គុណ៨/ Supply wood beam (Width = 0.04m, High = 0.08m, Length = 4m), 0.04x0.08x4m	Number	13.00	3.00	39.00	1	13.00	$ 39.00
14	ផ្គត់ផ្គង់ស័ង្កសី/ Supply zinc for wall and roof (Thickness = 0.25mm)	M2	30.00	3.00	90.00	1	30.00	$ 90.00
15	ផ្គត់ផ្គង់ដែកគោល/ Supply nail	KG	2.00	1.00	2.00	1	2.00	$ 2.00
16	ផ្គត់ផ្គង់វីសជាប់ស័ង្កសី/ Supply screw for zinc	KG	4.00	1.00	4.00	1	4.00	$ 4.00
17	ផ្គត់ផ្គង់ទុយោភីវីស៊ី ២១/ Supply blue PVC pipe (Diameter = 21mm,th:8.5mm, Length = 4m)	M	4.00	1.00	4.00	1	4.00	$ 4.00
18	ផ្គត់ផ្គង់ទុយោភីវីស៊ី ២៧/Supply blue PVC PIPE (Diameter :27mm,th:8.5, Length:4.0m)	M	4.00	1.50	6.00	1	4.00	$ 6.00
19	ស៊ីហ្វូងពាង៤/Supply floor drainer 34	Number	1.00	2.50	2.50	1	1.00	$ 2.50
20	ផ្គត់ផ្គង់ត្រចៀកទ្វារ/ Supply Hinge Door	Number	3.00	0.50	1.50	1	3.00	$ 1.50
21	ផ្គត់ផ្គង់ទុយោភីវីស៊ី ១០០/ Supply PVC Pipe (Diameter:100mm,th:13.5mm, Length:4.0m)	M	4.00	4.50	18.00	1	4.00	$ 18.00
22	ផ្គត់ផ្គង់តំណរដម៉ ១០០/ Supply Blue PVC for connect (Diameter:100mm, Angle 45dergree)	Number	1.00	3.00	3.00	1	1.00	$ 3.00
23	ផ្គត់ផ្គង់ដែក២០គុណ៤០គុណ១.២/ Supply REC Steel 20x40x1.2mm (Length: 6.0m)	M	12.00	1.00	12.00	1	12.00	$ 12.00
24	កម្លៃពលកម្ម/ Labor construction toilet	SET						
(06-10-2019) SUB-TOTAL BUDGET								$ 517.93



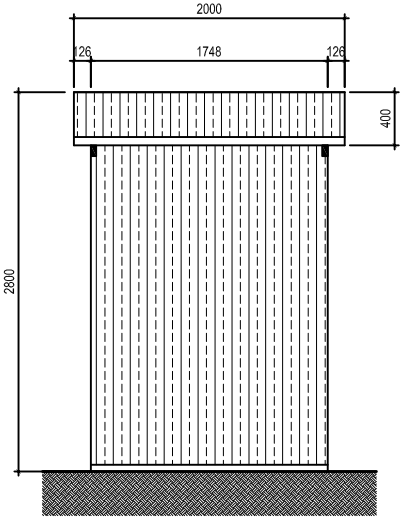
FLOOR PLAN



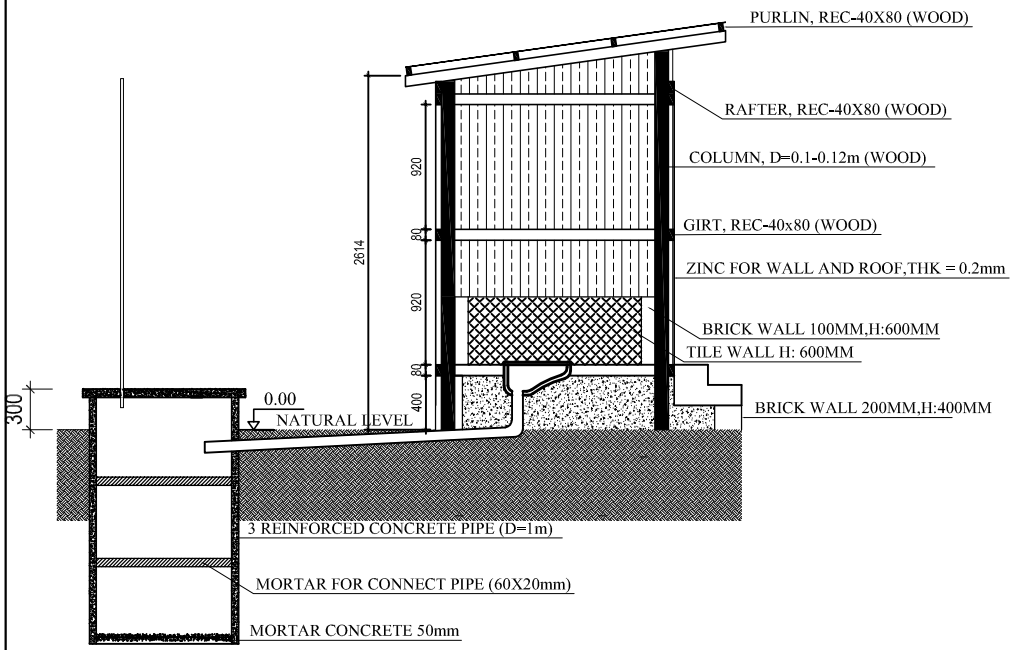
ROOF FLOOR PLAN



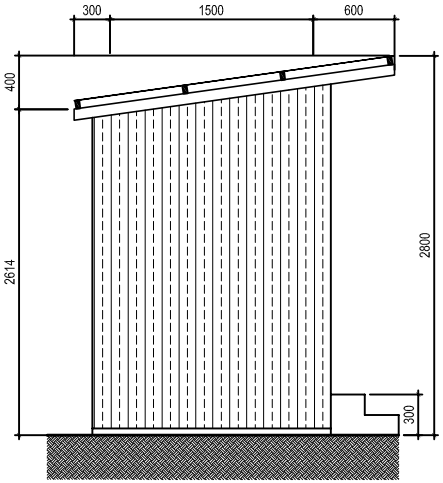
FRONT VIEW



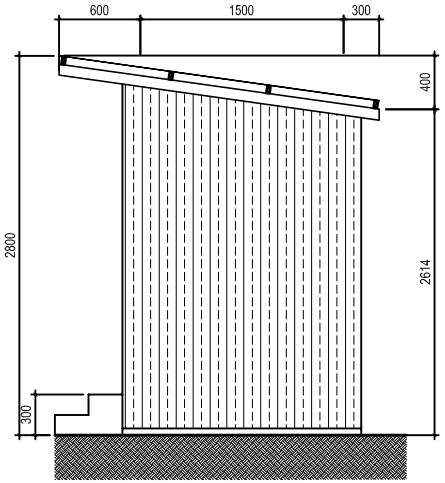
BACK VIEW



SECTION A-A



RIGHT VIEW



LEFT VIEW

TOILET TYPE WOOD AND CONCRETE PLAN

TITLE: PROPOSAL PLAN	PROJECT: TOILET	PADEK	CLIENT: ADB
APPROVED / DESIGN: VETH VOEUN / DRAWN: VETH VOEUN / DATE / SCALES	DRAWING NUMBER / REVISION / ORIGINAL / SHEET OF SHEETS		ARCHITECT

	DESCRIPTION	DATE	BY
	PRELIMINARY ISSUE		

TYPE 0: TOILET CONCRETE:W=1.5M,L=2.0M- Design by Wood						
N.0	បរិយាយ	ខ្នាត់	បរិមាណ	ប្រភេទសម្ភារៈ	តម្លៃ	តម្លៃសរុប
	Description	Unit	Quality	Type of Ma	Unit price	total price
1	លូបេតុង/ concrete pipe for toilet (Diameter = 1m)	Pcs	3	Concrete	10	30
2	ចាន់បង្គន់/urine with floor tile (1.2x1.2m)	Pcs	1	Concrete	50	50
3	ស៊ីម៉ង់/cement (K-Cement)	package	10	Cement	6	60
4	ឥដ្ឋប្រហោង/ Hollow brick	Pcs	1300	Brick	0.07	91
5	ខ្សាច់/sand	M3	3	Sand	20	60
6	ថ្ម១កុណ្ឌ២/Aggregate	M3	0.5	Aggregate	30	15
7	ការ៉ូដញ្ជាំង/Wall Tile	Box	3	box	7	21
8	ឈើសរ/wood column (Diameter = 1m, Length = 5m)	Pcs	4	wood	16	64
9	ឈើធ្នឹម/wood beam (Width = 0.04m, High = 0.08m, Length = 4m),0.04x0.08x4m	Pcs	13	wood	3	39
10	ស័ង្កសី/zinc for wall and roof (Thickness = 0.2mm)	M2	30	Zinc	3	90
11	ដែកគោល/ nail	kg	2	Nail	1	2
12	វីសជាប់/screw for zinc	kg	4	Screw	1	4
13	ទុយោ/ blue PVC pipe (Diameter = 21mm,th:8.5mm, Length = 4m)	pcs	1	PVC	4	4
14	គ្រាចៀកទ្វារ/ Hinge Door	Pcs	3	Steel	0.5	1.5
15	ទុយោ/PVC Pipe (Diameter:100mm,th:13.5mm, Length:4.0m)	Pcs	1	PVC	16	16
16	ទុយោ/ Blue PVC for connect (Diameter:100mm, Angle 45dergree)	pcs	1	PVC	3	3
17	ដែកជ្រុង/REC Steel 20x40x1.2mm (Length: 6.0m)	pcs	2	Steel	5.5	11
18	ពលកម្ម/Need to survey arround community	set	1	Labor		
(14 Oct 20219) SUB TOTAL						$ 561.50

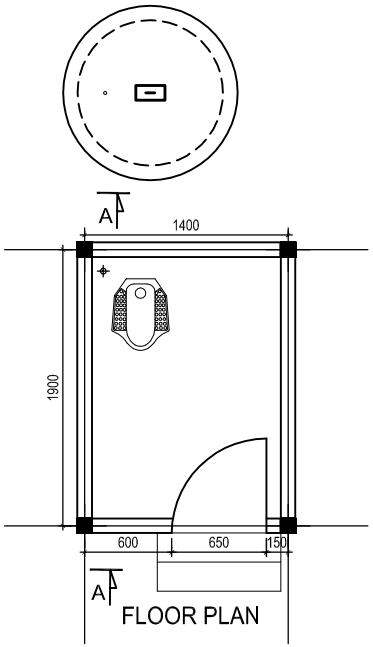
TYPE I: TOILET CONCRETE:W=1.5M,L=2.0M- Design by Civil Engineer						
N.0	បរិយាយ	ខ្នាត់	បរិមាណ	ប្រភេទសម្ភារៈ	តម្លៃ	តម្លៃសរុប
	Description	Unit	Quality	Type of Ma	Unit price	total price
1	ខ្សាច់រៀប/sand type 2	M3	2	Sand	10	20.0
2	ខ្សាច់ប្លក/sand type 1	M3	1	Sand	10	10.0
3	ខ្សាច់ស្លុយចាក់បំពេញ/sand type 3	M3	1.35	Sand	10	13.5
4	ថ្ម១គុណ២/aggregate 1x2	M3	1	Aggregate	25	25.0
5	ថ្ម៤គុណ៦/gravel 4x6	M3	0.5	Gravel	25	12.5
6	ស៊ីម៉ង់រៀប/Cement for concrete	bage	15	Cement	6	90.0
7	ស៊ីម៉ង់ប្លក/Cement for plastering	bage	6	Cement	5.5	33.0
8	ដែកថ្នាំងអំពៅ/Rebar	kg	56.2	Rebar	1.1	61.8
9	ដែកកង់/Stirrup	kg	23.8	Stirrup	1.1	26.2
10	ឥដ្ឋ/Hallow brick	pcs	1600	Brick	0.07	112.0
11	ឥដ្ឋខ្យល/wind brick	pcs	4	Concrete	5	20.0
12	ការ៉ូដញ្ជាំង/Wall Tile (30x60)	box	6	Tile	8	48
13	ការ៉ូជាត/Floor Tile (30x30)	box	3	Tile	5	15
14	ចាន់បង្គន់/ Urin ro toilet	pcs	1	Toilet	20	20
15	ថ្នាលាប/Color painting	kg	4	Color	5	20
16	លូកង់/Drainage Pipe	pcs	3	Concrete	10	30
17	ទុយោ១០០/PVC (D:100)	pcs	1	PVC	15	15
18	ទុយោ២១/PVC (D:21)	pcs	1	PVC	3	3
19	ទុយោ៦០/PVC (D:60)	pcs	1	PVC	4	4
20	ស៊ីហ្វុងដ៦០/Floor Drainer	pcs	1	PVC	1.5	1.5
21	ដែកជ្រុងពាក់គុណ៦០គុណ១.២/REC: 30x60	pcs	2	Steel	9	18
22	ដែកជ្រុង២៥គុណ២៥គុណ១.២/REC: 25x25	pcs	2	Steel	4.5	9
23	ស័ង្កី/Zinc th:3mm	M2	6	Zinc	3.5	21
24	វីសជាញ់/Screw	kg	1	Screw	5	5
25	ជូរផ្សារ/Welding	box	1	Welding	4	4
26	Need to survey arround community	set	1	Labor		
(14 Oct 20219) SUB TOTAL						$ 637.45

TYPE I: TOILET CONCRETE:W=1.6M,L=1.6M,H:3.5m

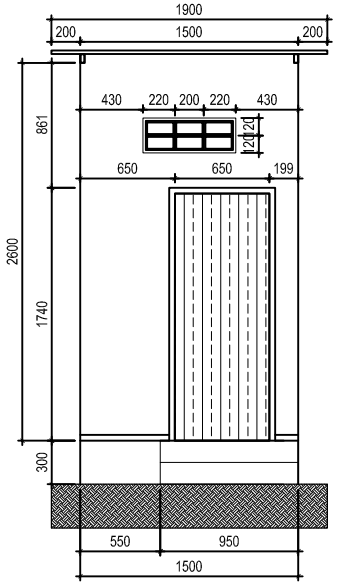
N.0	បរិយាយ	ខ្នាត់	បរិមាណ	ប្រភេទសម្ភារៈ	តម្លៃ	តម្លៃសរុប
	Description	Unit	Quality	Type of Materail	Unit price	total price
1	ជីកដី/Excavation soil	M3	20.9	Soil	2.5	52.3
2	ដីចាក់បំពេញ/Backfilling soil Leach Field	M3	6.962	Soil	5	34.8
3	ខ្សាច់រៀប/sand type 2	M3	3.44	Sand	8	27.5
4	ខ្សាច់បូក/sand type 1	M3	0.28	Sand	8	2.2
5	ថ្ម១គុណ២/aggregate 1x2	M3	4.53	Aggregate	25	113.3
6	ថ្ម៤គុណ៦/gravel 4x6	M3	3.208	Gravel	25	80.2
7	ស៊ីម៉ង់រៀប/Cement for concrete	bage	42	Cement	5.5	231.0
8	ស៊ីម៉ង់បូក/Cement for plastering	bage	4	Cement	5.5	22.0
9	ដែកថ្នាំងអំពៅ/Rebar	kg	383.0	Steel	0.7	268.1
10	ដែកកង់/Stirrup	kg	53.0	Steel	0.8	42.4
11	ឥដ្ឋ/Hallow brick	pcs	478	Brick	0.05	23.9
12	ការ៉ូដញ្ជាំង/Wall Tile (30x60)	box	4.313	Tile	5	21.565
13	ការ៉ូបាត/Floor Tile (30x30)	box	1.785	Tile	5	8.925
14	ចាន់បង្គន់/ Urin ro toilet	pcs	1	Toilet	10	10
15	ថ្នាំលាប/Color painting	kg	5	Color	5	25
16	ម្សៅបៀក/Skim Coat	kg	25	Skim Coat	0.34	8.5
17	កែង១០០/connection L PVC 100	pcs	4	PVC	2.5	10
18	ទុយោ១០០/PVC (D:100,th: 8.5)	M	7.55	PVC	4.5	33.975
19	កែង ២៧/connection L PVC 27	pcs	1	PVC	1.5	1.5
20	ទុយោ២១/PVC (D:27,th:8.5)	M	5.5	PVC	1.5	8.25
21	ក្រចាប់ទុយោ27	pcs	1	PVC	1	1
22	ក្រចាប់ទុយោ60	pcs	2	PVC	1.5	3
23	កែង ៦០/connection L PVC 60	pcs	5	PVC	2	10
24	ទុយោ៦០/PVC (D:60,th:8.5)	M	5.9	PVC	1.5	8.85
25	Gutter	M	2.1	Zinc	2.7	5.67
26	ស៊ីហ្វុង៦០/Floor Drainer	pcs	1	PVC	1.5	1.5
27	ដែកជ្រុង៤០គុណ៨០គុណ១.៨/REC: 40x80x1.	M	10.5	Steel	2.7	28.35
28	ដែកជ្រុង៤០គុណ៤០គុណ១.២/REC: 40x40x1.	M	10.51	Steel	2	21.02
29	Gavelnized Steel Handrail Ø40mm	M	23.5	Steel	1.34	31.49
30	Fibro cement Sheet 500x1500	M2	5.901	Fibro	5	29.505
31	Facia Board 20x200	M	2	Facia Board	3	6
32	ឥដ្ឋព្រិល (200x400)	pcs	3	concrete	2	6
33	Need to survey arround community	set		Labor		
BOQ- 14 Oct 20219						$ 1,177.77

TYPE I: TOILET CONCRETE:W=1.6M,L=1.6M,H:1.0m

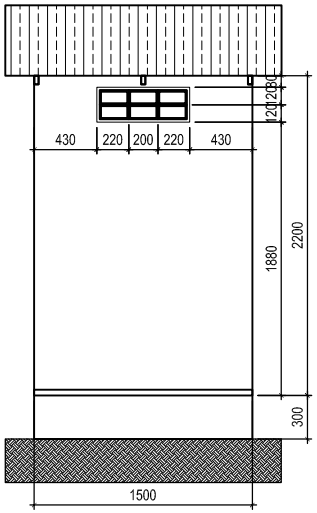
N.0	បរិយាយ	ខ្នាត់	បរិមាណ	ប្រភេទសម្ភារៈ	តម្លៃ	តម្លៃសរុប
	Description	Unit	Quality	Type of Materail	Unit price	total price
1	ជីកដី/Excavation soil	M3	16	Soil	2.5	40.0
2	ដីចាក់បំពេញ/Backfilling soil Leach Field	M3	8.84	Soil	5	44.2
3	ខ្សាច់រៀប/sand type 2	M3	2.1192	Sand	8	17.0
4	ខ្សាច់ហូក/sand type 1	M3	0.28	Sand	8	2.2
5	ថ្ម១គុណ២/aggregate 1x2	M3	3.1576	Aggregate	25	78.9
6	ថ្ម៤គុណ៦/gravel 4x6	M3	4.08	Gravel	25	102.0
7	ស៊ីម៉ង់រៀប/Cement for concrete	bage	28.128	Cement	5.5	154.7
8	ស៊ីម៉ង់ហូក/Cement for plastering	bage	4	Cement	5.5	22.0
9	ដែកថ្នាំងអំពៅ/Rebar	kg	192.0	Steel	0.7	134.4
10	ដែកកង/Stirrup	kg	28.0	Steel	0.8	22.4
11	តាឌ្ឍ/Hallow brick	pcs	478	Brick	0.05	23.9
12	ការ៉ូដញ្ជាំង/Wall Tile (30x60)	M2	4.313	Tile	5	21.565
13	ការ៉ូបាត/Floor Tile (30x30)	M2	1.785	Tile	5	8.925
14	បាន់បង្គន់/ Urin ro toilet	pcs	1	Toilet	10	10
15	ថ្នាលាប/Color painting	kg	5	Color	5	25
16	ម្សៅបៀក/Skim Coat	kg	25	Skim Coat	0.34	8.5
17	កែង១០០/connection L PVC 100	pcs	4	PVC	2.5	10
18	ទុយោ១០០/PVC (D:100)	M	5.1	PVC	4.5	22.95
19	កែង ២៧/connection L PVC 27	pcs	1	PVC	1.5	1.5
20	ទុយោ២៧/PVC (D:27)	M	3	PVC	1.5	4.5
21	ក្រចាប់ទុយោ27	pcs	1	PVC	1	1
22	ក្រចាប់ទុយោ60	pcs	2	PVC	1.5	3
23	កែង ៦០/connection L PVC 60	pcs	5	PVC	2	10
24	ទុយោ៦០/PVC (D:60)	M	3.4	PVC	1.5	5.1
25	Gutter	M	2.1	Zinc	2.8	5.88
26	ស៊ីហ្វុង៦០/Floor Drainer	pcs	1	PVC	1.5	1.5
27	ដែកជ្រុង៤០គុណ៨០គុណ១.៨/REC: 40x80x1.8	M	10.5	Steel	2.7	28.35
28	ដែកជ្រុង៤០គុណ៤០គុណ១.២/REC: 40x40x1.2	M	10.51	Steel	2	21.02
29	Gavelnized Steel Handrail Ø40mm	M	7.4	Steel	1.34	9.916
30	Fibro cement Sheet 500x1500	M2	5.901	Fibro	5	29.505
31	Facia Board 20x200	M	2	Facia Board	3	6
32	តាឌ្ឍក្រិល (200x400)	pcs	3	concrete	2	6
33	Need to survey arround community	set		Labor		
(14 Oct 20219) BOQ						$ 881.95



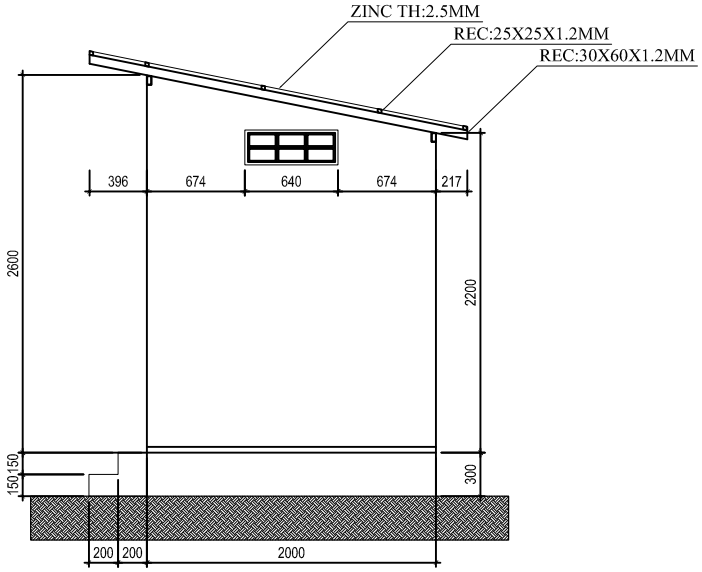
FLOOR PLAN



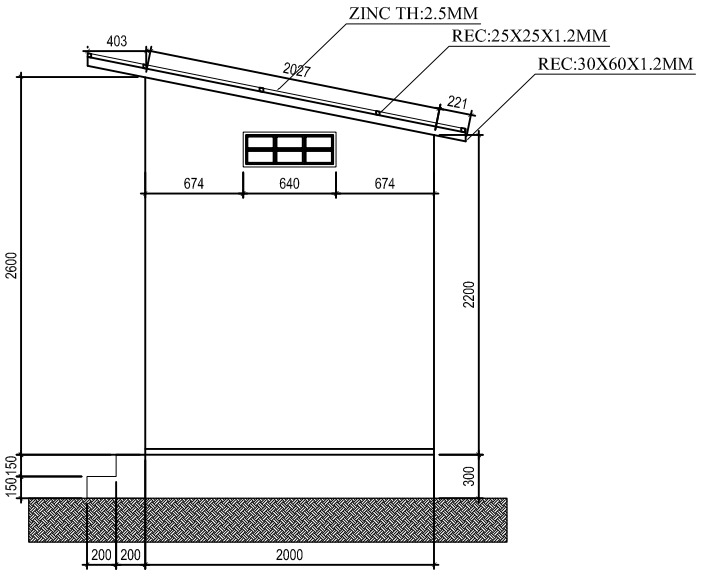
FRONT VIEW



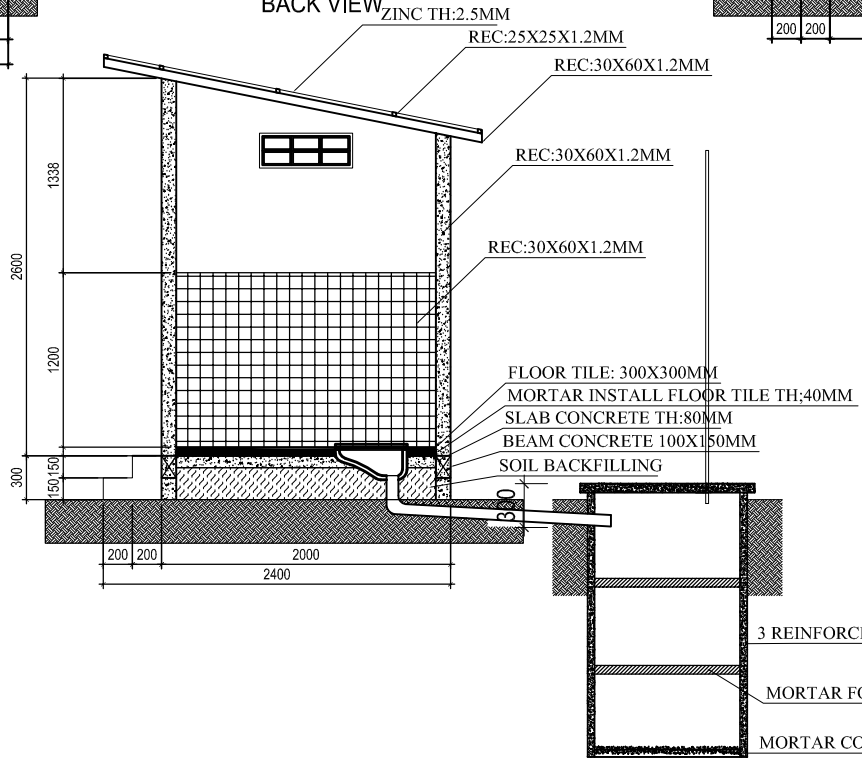
BACK VIEW



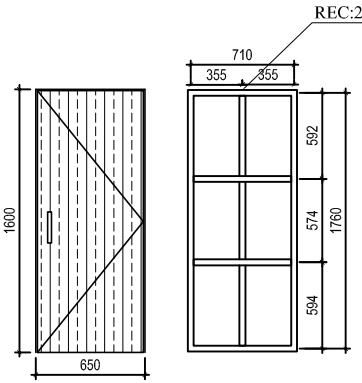
RIGHT VIEW



LEFT VIEW



SECTION A-A

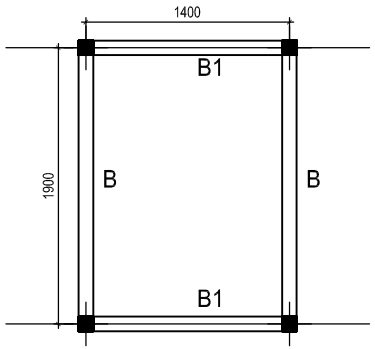


DOOR DETAIL

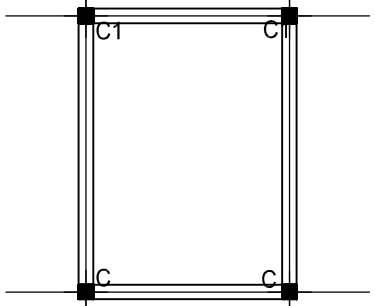
TOILET TYPE CONCRETE PLAN

TITLE: PROPOSAL PLAN	PROJECT: TOILET	PADEK	CLIENT: ADB
APPROVED / DESIGN: VETH VOEUN / DRAWN: VETH VOEUN / DATE / SCALES	DRAWING NUMBER / REVISION / ORIGINAL / SHEET OF SHEETS		ARCHITECT

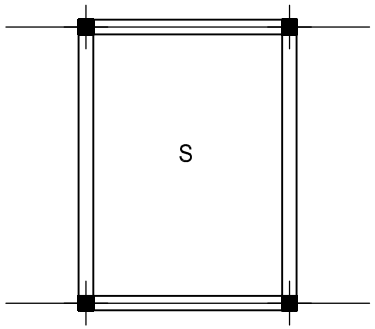
	DESCRIPTION	DATE	BY
	PRELIMINARY ISSUE		



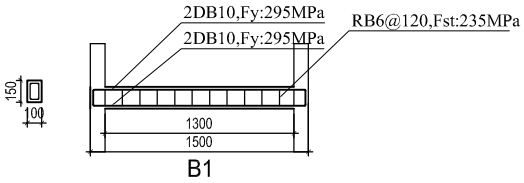
BEAM DETAIL

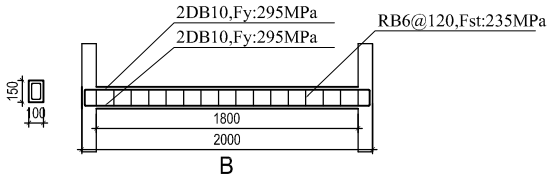


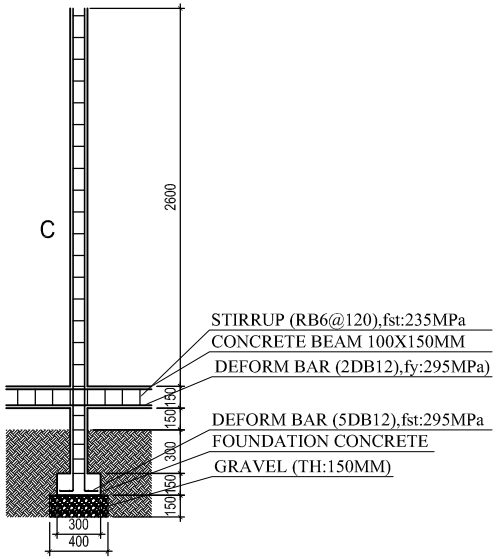
SLAB DETAIL



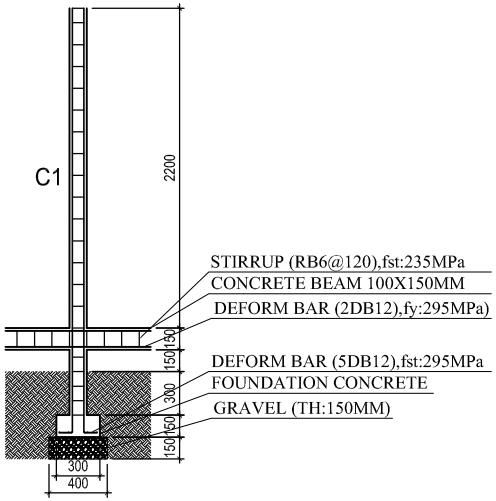
SLAB DETAIL



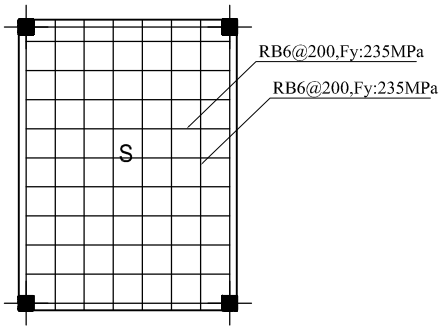




FOUNDATION AND COLUMN DETAIL



FOUNDATION AND COLUMN DETAIL

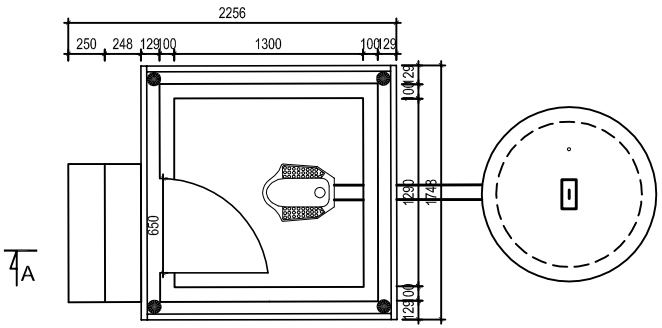


SLAB DETAIL

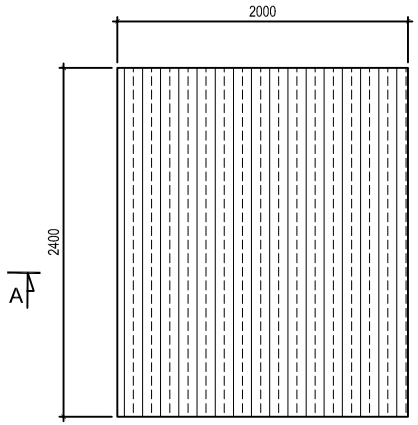
TOILET TYPE CONCRETE PLAN

TITLE: PROPOSAL PLAN	PROJECT: TOILET	PADEK	CLIENT: ADB
APPROVED / DESIGN: VETH VOEUN / DRAWN: VETH VOEUN / DATE / SCALES	DRAWING NUMBER / REVISION / ORIGINAL / SHEET OF SHEETS		ARCHITECT

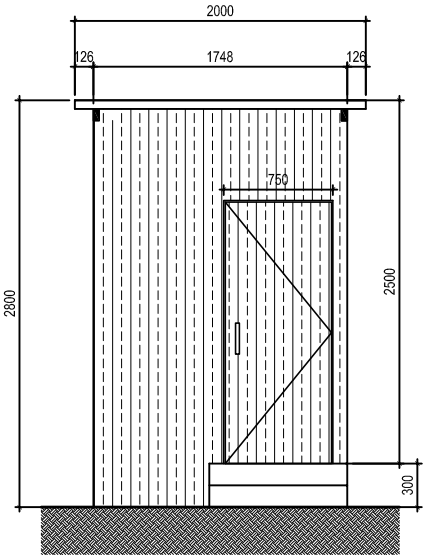
	DESCRIPTION	DATE	BY
	PRELIMINARY ISSUE		



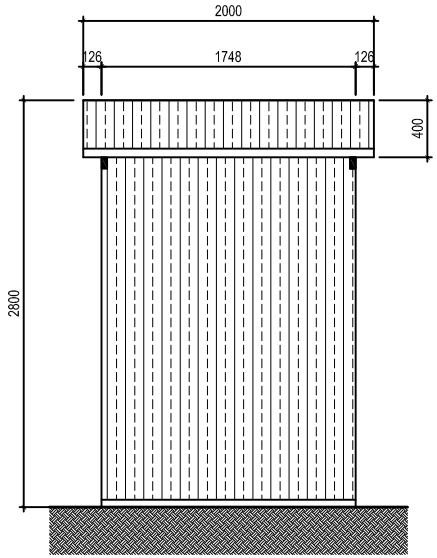
FLOOR PLAN



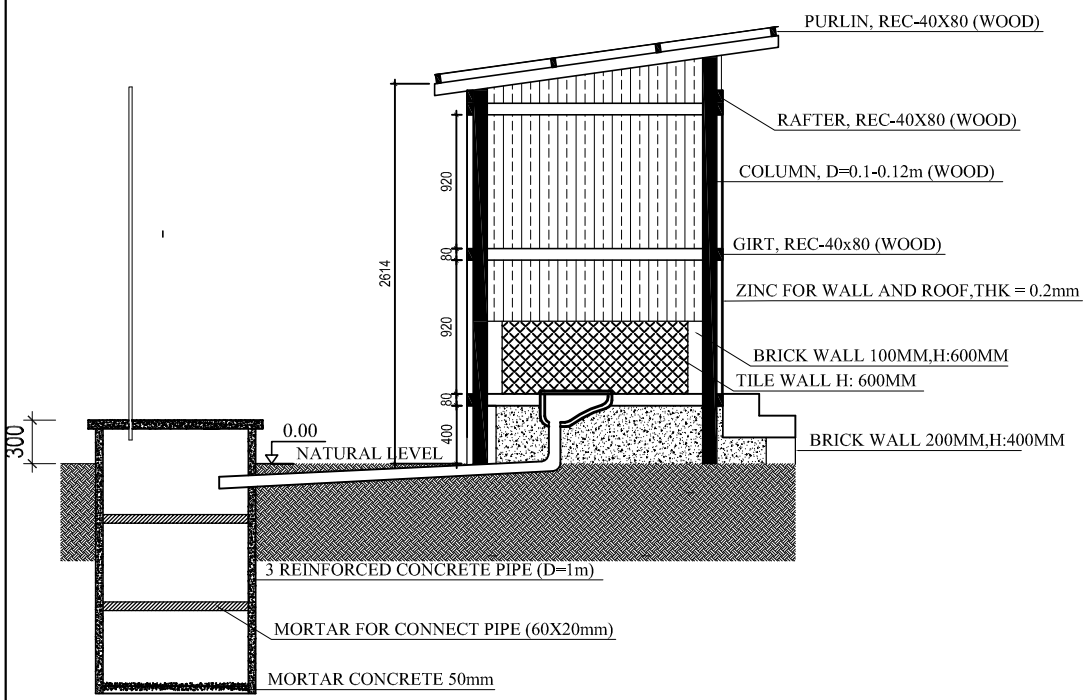
ROOF FLOOR PLAN



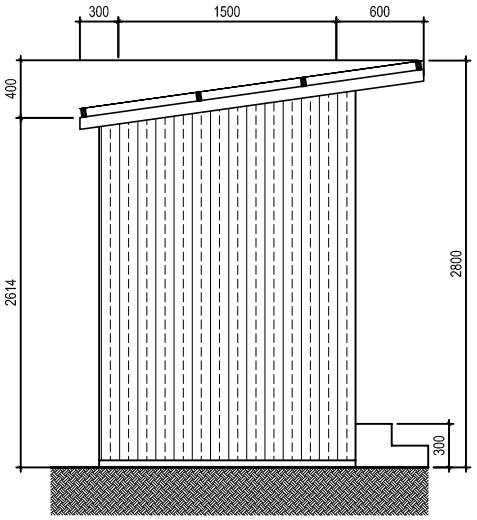
FRONT VIEW



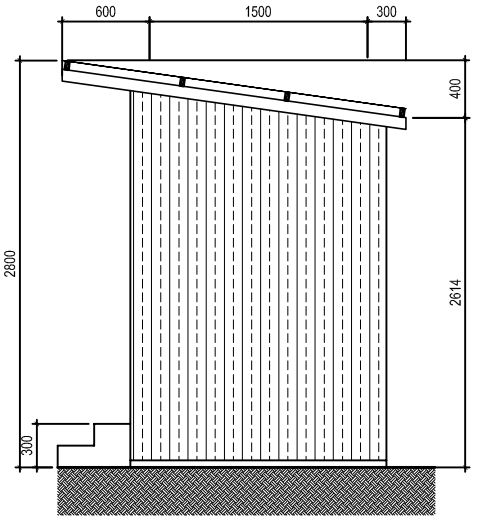
BACK VIEW



SECTION A-A



RIGHT VIEW



LEFT VIEW

TOILET TYPE WOOD PLAN

TITLE: PROPOSAL PLAN	PROJECT: TOILET	PADEK	CLIENT: ADB
APPROVED / DESIGN: VETH VOEUN / DRAWN: VETH VOEUN / DATE / SCALES	DRAWING NUMBER / REVISION / ORIGINAL / SHEET OF SHEETS		ARCHITECT

	DESCRIPTION	DATE	BY
	PRELIMINARY ISSUE		

TECHNICAL SPECIFICATION

Table of Contents

SPECIFICATIONS & PERFORMANCE REQUIREMENTS

1) GENERAL

The Works specified in this Section include the supply, installation, and construction of all items concerning the construction of the all components of household latrines. The Contractor shall perform the works carefully and adequately, providing his own staff, labor force, and the necessary equipment and materials. The Works shall be performed in accordance with these technical specifications, the drawings, other relevant Project Document, and all others norm and regulations in force in the Kingdom of Cambodia.

The term "Project Manager" or the "Engineer" used in this document may also be any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager), who is responsible for supervising the execution of the Works and administering the Contract.

For the household latrines, the Contractor may use locally available construction materials and technologies for the construction of pour-flush household latrines as detailed in the Drawing.

All materials to be incorporated into the Works shall be new or approved by Engineer. Materials shall be transported, stored and stacked according to the manufacturer's instructions and requirements. Materials and products with defects shall be rejected from the site and replaced at the Contractor's cost, if required so by the Engineer.

As soon as reasonable after the Contract has been awarded, the Contractor shall submit to the Engineer for his approval list of proposed suppliers, sources of the materials and technical information concerning the materials to be used for execution of the works. The Engineer may require additional information (certificates, test reports, installation manuals etc.) and shall give his decision no later than two weeks after receiving all necessary information, concerning suppliers and materials.

No material shall be obtained and used in works before its approval by the engineer. Approval shall be obtained sufficiently in advance to avoid delay in field works;

For the purpose of this contract**,** the technical designs and work specifications will be as follows:

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
1. Work Program	• The contractor shall communicate with the Project Manager, respective village chiefs and relevant beneficiary household regarding the work program for the construction of the latrines. • These parties for the construction of latrines will jointly agree the work program and the work program shall also include the agreed list of the names of the beneficiary households. • The work program shall submit the work program for approval from the Project Manager and the Employer prior to the commencement of works. • The Contractor will provide a copy of the agreed work program to each beneficiary household.

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
2. Site Preparation and Shop drawings	• **Selection of Latrine Design Option**: Through informed choice process, facilitated by the NGO team and the Village Development Committee, the pour-flush latrine for the family toilet. • **Site Selection**: Upon commencement of the works, the construction site for the family latrine will be selected by the beneficiary households following the criteria include but not limit to the followings: good location for construction of a septic tank, at least 30 meters away from an existing well, and not prone to flood water. • The Contractor is responsible for preparing the shop drawings for construction and submit for approval by the Project Manager prior to commencement of the works.
3. Tools and Materials	• **Tools:** hoes, baskets, spades, hammers, measuring tapes, concrete ring lifting equipment, profile boards, line level, string lines, etc. • **Materials:** Portland cement, river sand, coarse aggregate (gravel), crush stone, water, concrete ring, septic tanks, bricks, tiles, toilet pan, nails, wire, plastic PVC-∅100 mm and ∅60, 27mm pipes, steel bar and all other materials as shown in the *approved* technical drawings and/or as approved by the Project Manager and/or Employer. • **Concrete Ring moulds:** a minimum of one steel concrete ring mould per village is required.
4. Soil Excavation	• **Soil Excavation and Digging:** The first activity in the construction of family latrine is the excavation and digging of soil, and to place one concrete ring as shown in the technical drawing. Safety measures shall be taken to ensure the safety of workers.
5. Latrine Section: Installation of Septic Tank	• **Compaction:** After soil excavation, crushed stone (sizes 40mm x 60mm) at least 150 mm thick shall be placed and compacted. Then a 50mm thick layer of lean concrete shall be placed on top of the stone. • **Installation of Concrete rings:** After the soil excavation, the installation of culvert and the PVC pipe with relevant diameter must also be installed and firmly attached to the concrete ring. • **Back Filling:** After completing the installation of the PVC pipe into the concrete ring, the concrete ring must be back-filled all around with materials approved by the Engineer, and a concrete cover placed over the concrete rings.
6. Latrine Section:	• **Installation of Ceramic water seal pan and Concrete Mortar:** concrete mortar must be mixed to satisfaction of the Engineer and installed together with the Ceramic water seal pan in accordance with the dimensions and levels as shown in the approved construction drawings.
7. RC Structures	• Construction of slab.

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
	Structural members are constructed with steel reinforced concrete, and with dimensions, levels…etc as shown in the approved shop drawings or as approved by the Engineer. • Prior to pouring concrete, slump test shall be conducted. A mixed concrete of slump of 50-100mm shall be used. • The slab shall be constructed from reinforced concrete and shall be as shown in the drawing. The slab shall be finished with a smooth and level surface that is free from any low or high points. The mesh shall be properly tied together with steel tie wire to maintain shape whilst concrete is being poured. The minimum thickness of concrete cover for all steel reinforcement shall be 25mm.
8. Masonry walls	• The masonry wall shall be constructed with approved bricks with quality and appropriate sizes, with dimensions as shown in approved shop drawings or as approved by the Engineer. • **Brick Walls** Bricks shall be thoroughly washed and soaked for at least 4 hours before being used. Bricks shall be laid plumb and level along a string. The height of one day's work shall not exceed 1500mm. Bricks shall be laid to provide good keying in all direction as follows: - Along structural members: diam. 6mm rods cast in structure, extending not less than 200mm in to mortar joints and placed at vertical interval of not more than 300mm and horizontal intervals not exceeding 700mm. - Between wall panels, attention shall be given to ensure cross bond between both walls and necessary steel rods shall be provided as above. All brick works joints shall be filled full with mortar. Joints in brick work receiving rendering afterwards shall be raked clean to a depth of 10mm to ensure a proper bonding. Masonry shall be cured for a period of 7 days. A single skin brick wall shall be constructed between columns as wall cladding and also as the internal partition walls. The partition walls shall extend full height to the roof. The brickwork shall be joined by mortar joint of nominal thickness of 15 mm. All brickwork shall be constructed in a true and straight vertical plane. All the brickwork shall be constructed by skilled and competent brick-layers. - For a plain brickwork wall of a half brick thickness or 100mm, the plain bricks need conforming to the following specification: Minimum compressive strength should be 14 MPa for individual bricks whereas an average over 5 bricks should attain strength of 18 MPA. Bricks shall be laid in common bond. Unless otherwise specified, plain bricks shall be used in all masonry works under foundation, water tank and other structure exposed to water. - Hollow brick work of a half brick thickness or 100mm needs conforming to the following specification: They will be extruded brick type, properly fired in a kiln. Bricks shall be laid in stretcher bond. The maximum height of 100mm thick brick masonry wall shall not exceed 3meters between tie

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
	beam and the horizontal distance between cross walls or vertical structural elements shall not exceed 4,5m. **Wall Mortar Rendering** All rendering (finishing) works shall be carried out by experienced/skilled masonry workers. Plastering shall be executed in a neat, true and workmanship manner. Corners shall not be rounded or beveled, unless specified. All intersections, edged and corners shall have sharp edged, unless otherwise directed and shall be straight angles. Lines shall be straight and true. Surface shall be plane and smooth. The plastering shall be carried out at least two weeks after masonry work is completed. The render shall be applied on both sides of walls. The thickness of the mortar finish shall be a minimum of 15mm. If the finishing is found not to be smooth or as per the thickness specified, the finishing will be rejected and the Builder shall redo and rectify the problem. Cement shall preferably be mixed cement type using Portland cement added with lime as follow: - For internal brick surface: Mix in volume (1:6) 1 part of Portland cement to 6 parts of fine sand or approximately 250 kg of cement per m^3 of sand. The mix shall be added with 20% of lime. - On concrete surface or external brick surface: Mix in volume (1:4) 1 part Portland Cement to 4 parts of fine sand. Mortar shall be mixed in such quantities as it can be used within a period of 3 minutes after the mixing with water. Mortar that has taken initial setting shall be discarded. The water-cement factor of the mortar shall be no more than 0.5. Before starting plaster works, brick joints shall be raked to a depth of 10mm. Concrete surfaces shall be sufficiently roughened. All surfaces shall be cleaned to remove any loose materials and shall be thoroughly dampened with water. Curing of plaster shall consist in keeping the fishing surface wet throughout the progress of works and during 10 days thereafter. If any cracks or blemishes appear, the defects shall be repaired by the Builder at his own expenses. Plaster shall be trowelled and floated to a true and plumb surface and tested frequently during the progress of the work with a straight edge sufficiently long. There shall be no overlaps or construction joints in a single unbroken surface unless its size is cover 35 m2.
9. Roofing	The roof works includes but not limit to the following works (wood structures and zinc works):

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
	- Supply and construction of wood rafters - Supply and construction of wood purlins - Supply and construction of wood bracing and supporting - Supply and construction of wood connection - Supply and installation of zinc doors - All wood and zinc works required for the good use of all the installation - All other incidental items to complete the works.
10. Staffing	• **Staffing:** If the contractor intends to hire skilled and unskilled labor from the beneficiary community where the family latrine will be constructed (i.e. labor for concrete ring and slab making, and construction works), the contractor shall discuss with the village chiefs for labor cost, number of labor required, payment terms, and working conditions. Although the Project Manager may facilitate the discussion, the Project Manager will not decide on these matters. The Contractor must negotiate with the village chief, and should make written agreement signed by both parties. The Contractor must ensure that the selected skilled and unskilled laborer must be capable and willing to complete the contracted activities for the construction of public latrine and the contractor must pay laborers on time in accordance with the agreed payment terms. • The contractor shall not employ the children.
11. Payment for latrines	• Payment for latrines shall be made for completed works in all aspects and in accordance with the specifications, and per the pay items in the Bill of Quantity.

2) SUPPLY OF CONSTRUCTION MATERIALS AND CONSTRUCTION PROGRAM

The Contractor shall submit to the Project Manager for review and approval the construction program for the whole of the works, construction shop drawings, materials, samples and equipment product data, samples and test results and the requirement as specified in related sections or required by the Procurement Manager, prior to the intended date of use of all such materials and equipment in the permanent works. The Project Manager shall review all submittals to ensure that they conform to the Contract.

Except as otherwise so stated, the Project Manager shall review the construction program, shop drawings, materials, samples and equipment product data, samples and test results within fourteen (14) days of the submission by the Contractor.

The Project Manager shall inform the Contractor if the approval will take a longer period than fourteen (14) days. Unless the submittal is reviewed and approved by the Project Manager, work involving relevant products or materials may not proceed.

The Project Manager's review will be signified by comments as required identifying items for resubmission and by stamp of the Project Manager when work is released for distribution. The Contractor's contractual responsibility shall not be relieved by the Project Manager's review of submittals.

Samples and/or brochures and manufacturer's specifications for all construction materials to be used

in the construction of the latrines shall be submitted to the Project Manager for his approval prior to the works commencing.

The quality of the materials shall be as follows:

2.1. Cement

The cement to be used for the concrete work shall be Ordinary Portland Cement (Type II) to BS 12: 1971 or ASTM C 150-97.

All cement for masonry and plastering shall be **Portland Cement-ASTM.C150 TYPE I**. No other type of cement shall be used unless the Contractor has specified an equivalent alternative at the time of bidding and it has been approved in writing by the Engineer. It shall be the Builder's responsibility to provide technical documentation with his bid supporting any request to use an alternative type of cement.

2.2. Steel Reinforcement

Steel reinforcement bar shall be Grade 300 (Yield Strength 235 N/mm2) round steel bar and sizes, dimensions and weight of the bars shall confirm to the requirements of British Standards, ASTM, or equivalent.

All steel reinforcement shall be clean and free of scale, oil, dirt, pits or deformities.

The steel used in the reinforced concrete shall be in accordance with ASTM A615. The grade of steel reinforcement shall be defined in N/mm² as specified in the Drawings. Manufacturer's test certificate shall be submitted to the Engineer for his approval. The Engineer may instruct the Builder to carry out additional test if required.

All steel reinforcement bar and tie wires used in the production of reinforced concrete shall be new, clean and free of grease and rust. Steel bars that split when bent shall be rejected. Steel reinforcement bars that are larger in size than 10mm shall be "deformed bar" type of reinforcement. These bigger bars shall not be a smooth round bar but shall have a braised surface. Steel reinforcement shall be strongly tied together and into position so that the steel is not moved when the concrete mix is being vibrated.

The standard weight per meter that shall be applied for the various bar are as follow:

Ø6mm 0.222kg	Ø12mm 0.888kg
Ø8mm 0.395kg	Ø14mm 1.208kg
Ø10mm0.617kg	Ø16mm 1.578kg

Reinforcement accessories consisting of spaces, chairs, ties and pre-cast concrete blocks shall be provided for placing the reinforcement and securing specified concrete cover of the reinforcement.

Cutting and bending shall be performed at a central location equipped and suitable for that activity. Bars shall be accurately cut and bent as indicated on the shop drawing. Bars shall be bent cold. Heating of bars for bending or straightening will not be allowed.

Reinforcement bars shall be placed in accordance with the drawings provided. The bars shall be supported on metal chairs or spacers or on pre cast concrete blocks with a minimum dimension of 38mm by 38mm. The

spacers will be securely tied to the reinforcement in place with spacing of maximum 500 X 500 mm in case of slabs and minimum 2 blocks per meter run of beam and column. Hoops and stirrups shall be accurately spaced and wired to the reinforcement. No wood will be allowed inside the form.

Reinforcement shall be put in place and rigidly tied or wired with steel tie wire at all splices and crossing points and intersection. Point ends of wire ties shall always be away from formwork. Laps of splices shall be adequate to transfer stress by bond. Bars lap a minimum of 40 times the applied diameter. Whenever possible, splices of adjacent bars shall be staggered by a minimum of lap length. Concrete coverage for steel reinforcement shall be of 50mm.

2.3. Water

Water used for **mixing of concrete** or mortar shall be clean and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substances and shall have a Total Dissolved Salts content of less than 2000 mg/l TDS. Mix water shall not be taken from reducing environments, such as swamps, wetland or from lakes.

2.4. Aggregates and Crushed stone

The aggregates shall be appropriate for concrete use as follows:

- Unless otherwise specified, aggregate shall be complied with ASTM C33. Aggregate for concrete and mortar shall be hard and dense and free from earth, clay, shale or decomposed stone, organic matter and other impurities.

- Coarse aggregates for concrete work: Appropriate in grain-size distribution with maximum size of 20 to 25 mm.
- Sand for concrete work: Sand with silt content of maximum 3% and shall number 3 in grain size. River sand is preferred. Maritime sand shall not be used.

- Sand for masonry work: Sand used for producing concrete shall be well-graded, clean, sharp sand. The range of sand particle sizes shall be from 1mm to 5mm. The sand shall not contain any clay particles or organic material.

- Crushed stone for concrete base produced locally under the name of 4cm x 6cm trademark.

2.5. Wood

Wood for structure section as column (size Ø100mm) , roof rafter, roof purlin, wall rafter (size 40mm x 80mm) shall be dry and protected from decayed by painting with oil after cleaning.

2.6. CONCRETE MIX

The concrete used for the latrine shall consist of Ordinary Portland Cement, water and aggregate, and admixture, if necessary. The admixture shall be selected depending on the natural conditions at the site, and the tentative mixture will be made as below. The trial mix shall be conducted to obtain the actual mixture for the intended design strength of concrete. Having confirmed the concrete strength, the contractor shall submit the mixture to Project manager for approval. Afterward, the contractor shall use the approved mixture for the construction. The Engineer has right to reject the works if low quality of concrete had been used and the contractor will re-do the works with his own cost to the satisfaction of the Engineer.

When required by the Engineer the Contractor shall carry out tests of the total chloride content of the concrete mix. The total alkali content shall not exceed 3.0 kg/m3 of the concrete. Use of aggregate that

contain potentially alkali shall not be permitted.

Table 1 – Tentative Concrete mix proportions (Grade 25 Concrete)

Item	Unit	Mix by volume	Quantities per cum of mix	Approximate Quantities per 50 kg of bag of cement
Cement	kg	1	350	1
Sand (Dry)	m^3	2	0.50	0.071
10 mm x 20 mm aggregates (Dry)	m^3	4	0.75	0.107
Water	Litre	-	210	32.4

Concrete shall be cured for a minimum of two (2) days by adequate curing method after pouring. After placing, the surface of concrete shall be covered with mats or others and shall be kept humid for an appropriate period. The placed concrete shall be protected against external loads, impact and other harmful factors for 10 days.

Rate of sampling

The sampling of works concrete shall be at the average rate of one sample for every 20m3 concrete placed. If, for any reason the Engineer is not satisfied with the works concrete, he may instruct the contractor to further increase the rate of sampling. The samples shall be taken at the point oil discharge of the mixer or in the case of ready mixed concrete at the point of discharge from the vehicle or the point of casting as directed by the Engineer. At least one set of sample shall be taken from each individual placement of concrete. For reinforced concrete 6 cubes shall be made from each sample of concrete taken, 3 cubes for testing after 28 days.

2.7. LEAN CONCRETE MIX

Table 2 – Tentative Lean Concrete mix proportions (Grade 15 Concrete)

Item	Unit	Mix by volume	Quantities per cum of mix	Approximate Quantities per 50 kg of bag of cement
Cement	Kg	1	210	1
Sand (Dry)	m^3	3	0.56	0.13
10 mm x 20 mm aggregate (Dry)	m^3	6	0.78	0.18
Water	Litre	-	126	30

2.8. MORTAR

- For general masonry work: The mix ratio of the mortar shall be (1:4) in volume or 1 part of cement for 4 parts of sand with a minimum cement content of 400kg/m^3. Sand for cement mortar shall not have particles of clay.

- For masonry in foundation or exposed to water: Mix volume (1:3) 1 part of cement with 3 parts of sand with a minimum cement content of 500kg/m^3. The cement shall preferably be mixed cement type for masonry work or Portland type 1 cement added 20% of lime. Fine will be clean and void of saline or other destructive minerals and organic matters.

Mortars shall be mixed dry in the specified proportions until uniform color is obtained. Approved water shall then be mixed sparingly. The water cement ratio shall never exceed 0.5 by weight, unless indicated otherwise by the supervisor. Mortars shall be mixed in such quantities that it can be used within 30 minutes after adding the water in the mix. Mortar that is taken initial set shall not be used, nor shall it be re-mixed with fresh mortar and shall be discarded. Mixing time shall not be less than 5 minutes. Hand mixing will only be allowed on a clean surface and with express permission of the supervisor.

2.9. CERAMIC POUR FLUSH TOILET PAN

Ceramic water pour flush toilet pans shall be of the highest quality, complete with places for feet with ribbed section, white in colour, glazed and of the following minimum external dimensions:

Length:	500mm
Width:	400mm
Depth from top of pan to underside of water seal:	400mm
Minimum water seal depth:	30mm

The toilet pan shall be securely bedded and sealed on to the concrete slab with cement mortar (cement 1: sand 3) .

2.10. PVC PIPES:

U-PVC waste water pipe and ventilation pipes and fittings shall be of pressure rating 8.5 bars.

2.11. COMPACTION:

All soil compaction shall be done in layers not exceeding 20cm thickness.

2.12. Bricks

Bricks shall be made of burnt clay and be of first quality in strength and appearance. They shall be free from saline deposit, be thoroughly oven or kiln baked without being vitrified, of uniform color, regular size, form and texture with sharp square edges and parallel faces. Any bricks that are soft, porous or not completely oven dried shall be rejected. Bricks shall be regular in shape and of size 90mmx90mmx190mm for the hollow brick and 45mmx90mmx190mm for the solid brick. All bricks shall be soaked thoroughly before being placed in the brickwork. If any area of brickwork is found to contain poor quality bricks, the area shall be identified, the portion of brickwork demolished and replaced by the Builder.

2.13. Painting on internal walls

Whitewash

All masonry surfaces to be painted shall be dry, clean and rubbed down to provide a smooth and solid surface free of any loose or foreign material. Surface walls shall be sandpaper with sand paper Nº 40. All surfaces must be clean and dry before any paint coat is applied. The whitewash mix shall be made of gum and limewater. Lime rock and clean water shall be left standing for 8 hours after mixing to ensure good quality lime putty. The mix ratio shall be 5kg of gum: 100kg of lime. Only first quality gum and quicklime shall be used.

Colored whitewash

Where coloring is required the ochre of the color chosen shall be added to the whitewash mix. The whitewash mix shall be filtered to remove any solid particles before being used for painting. Three (3) applications of whitewash shall be applied by paintbrush to the masonry surface. The use of large size broom shall only be allowed for large surfaces. Care shall be taken to avoid covering frames and other elements of the building. Spots where suction is excessive shall be repainted locally before the second coat is applied. The coats shall be brought up alternating horizontally and vertically, while covering ALL the surface. The final coat should be brought up vertically. A minimum of 24 hours shall be allowed between each application of whitewash and light sanding with N º 40 sand papers shall be done to smoothen the surface between coats. The whitewash paint shall be applied by proper tradesman and paint brushed in a uniform manner to achieve an even coverage.

Where coloring is required, then ocher of the color or pigment chosen shall be added to the emulsion mix. The mix quantity shall be sufficient to complete to work or careful weighing of coloring powder shall be done to enable all mixes to have a matching shade. The mix shall be stirred thoroughly before use to ensure uniform shade is achieved.

2.14. Wall and floor tiling

Glazed ceramic tiles shall be 300 X 600mm for the walls and floor and 300mm X 300mm for the urinal with a maximum tolerance of 1mm overall. Tiles on the floor shall be not slipping. Tiles shall be square and plane. The glazed surface shall be free of defects such as air bubbles, chips or cracks. Unless specified otherwise in the drawings, glazed ceramic tiles shall be white.

Tiles shall be installed in true plane using liquid cement bedding. The laying pattern shall be such that cutting of tiles is minimized. Tile joints shall be 2mm wide and straight: vertical and horizontal protruding shall be made with beveled full size tiles. The exposed tile edges shall not be allowed. Excess bedding material in tile joints shall be removed before final setting.

2.15. Plumbing

Water distribution

Contractor engages his responsibility for the system (check the pressure, diam of the PVC…) and he will make his own plans of the network.

In buildings all pipes shall be concealed in walls. Prior to rendering walls, water installation shall be completed and tested under pressure for leaks.

Plumbing hardware and fittings

Each storage basin shall be provided with a water pipe for filling. This shall consist in a concealed grade valve in wall extended by a pipe, and elbow and a tap above the basin.

Sewer

All sewer disposals from toilets inside the toilets block(s) shall be made using 10mm, 7.5mm, 3.4mm or 2.1mm Thai PVC pipe type 8.5. Sewer shall dispose in straight line to manholes as located in the drawings. Each sewer shall be ventilated at the starting point of the stack or line with a 27mm diam PVC pipe.

Stacks pipe shall dispose in manholes located in the building plinth protection. The inlet or stack pipe in the manhole shall be installed such as it forms a water seal to prevent return of smell in the rooms.

Sewer pipe laid horizontally shall have the following gradients: Before or upstream of the septic tank, the gradient shall be 1:20 (5%) giving a fall of 50mm per meter run of pipe. All “T” sections shall be made of 45 degrees “Y” fittings and a 45 degrees elbow. Elbows of 90 degrees shall not be used, instead 2 elbows of 45 degrees shall be used. Each stack shall be provided with a ventilation pipe extending above the roof level. Necessary access fittings for cleaning and maintenance shall be provided as specified on the drawings. Gradients of drainage, sewer and ventilation after septic tanks shall be: Diam 100mm sewer: 1:50, rainwater: 1:60

The work shall be carefully laid out in advance of any cutting into the construction. No cutting will be done without the written permission of the supervisor. Cutting shall be carefully done and any damage to the building, the piping, as a result of the cutting shall be repaired by a skilled worker and without any cost to the Employer. Pipe sleeves will be required for the crossing of beams if pipes cannot cross underneath the beams. Pipe locations shall not interfere with the reinforcement in the beams or floor or with the shear concrete in or near the beams or walls.

Squatting pan

Vitreous China squatting pan shall be white ceramic type of pan karat type or equivalent. The pan shall have a water-seal “S” trap and be suitable for connection to a diam 100m pipe. The pan shall be installed using white cement.

Contact: Chhouk Samnang
Project Manager, Sanitation in Challenging Environments (SCE) Program
P: +855 (0) 16 535322 / (0) 17 460453
E: s.chhouk@ewb.org.au

engineers without borders australia

You are invited to Cambodia's 13th Sanitation in Challenging Environments Forum

When: Tuesday, 22nd October 2019

Time: 8:00am to 2:30pm

Location: Prototype visit Kandal Province
Meet at iDE Office, Ta Phon St Phnom Penh (map)
*Please note that there is **limited parking** at the iDE office. Please share transport or take a tuk tuk. If you require parking please let us know in advance*

RSVP: Before Friday 11th October 2019
By using this Google Form

The SCE Forums are an opportunity to hear case studies, share research, and work together to develop innovative solutions and partnerships to improve sanitation access for communities living in challenging environments in Cambodia. The purpose of this session is to showcase a prototype of a new sanitation product co-designed by Engineers Without Borders Australia and iDE. The sanitation product has been designed for areas with high clay content in the soil and high groundwater areas.

AGENDA

13th Sanitation in Challenging Environments (SCE) Network Forum

Details

Date and Time: Tuesday, 22nd October 2019

Location: Participants will meet at the iDE office in Phnom Penh (see map below and Google Map)
EWB will organise bus transport to Kandal Province

Meeting Purpose

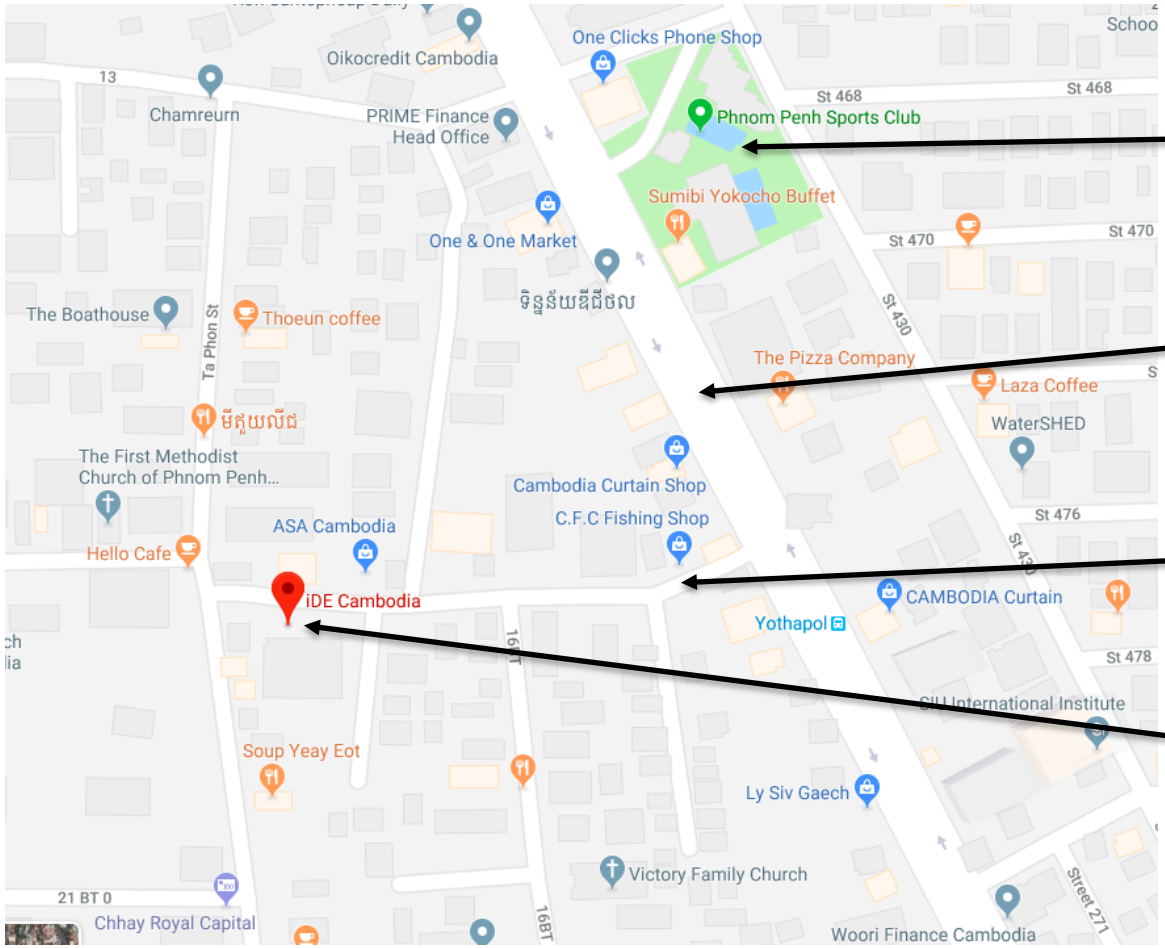
To bring together stakeholders who have an interest in addressing Sanitation in Challenging Environments (SCE) within Cambodia. The purpose of this session is to showcase a prototype of a new sanitation product co-designed by Engineers Without Borders Australia and iDE. The sanitation product has been designed for areas with high clay content in the soil and high groundwater areas.

Timing		Activity	Comment
8:00am	8:15am	Registration at iDE Office, Phnom Penh	Motor parking is available on request – please let us know in advance if you will require parking.
8:15am	9:30am	Briefing on the All Seasons Upgrade technology	EWB and iDE will provide an overview of the technology and show the full-scale prototype
9:30am	11:00am	Travel to Kandal Province, Ang Snuol District	Bus transport will be provided by EWB
11:00am	12:30pm	Visit household with installed prototype product	Participants will see: - Leach field site - Groundwater monitoring well - Soil texture testing - Pit testing technique
12:30pm	1:30pm	Lunch	Lunch will be provided by EWB
1:30pm	3:30pm	Travel back to iDE Office, Phnom Penh	Bus transport will be provided by EWB
3:30 pm		Finish	

Contact: Chhouk Samnang
Project Manager, Sanitation in Challenging Environments (SCE) Program
P: +855 (0) 16 535322 / (0) 17 460453
E: s.chhouk@ewb.org.au

engineers without borders australia

Location Map



Phnom Penh Sports Club

St 271

Ta Phon St

iDE Cambodia Office

From: How to Design Wastewater Systems for Local Conditions in Developing Countries, Robbins Ligon, IWA, 2013.

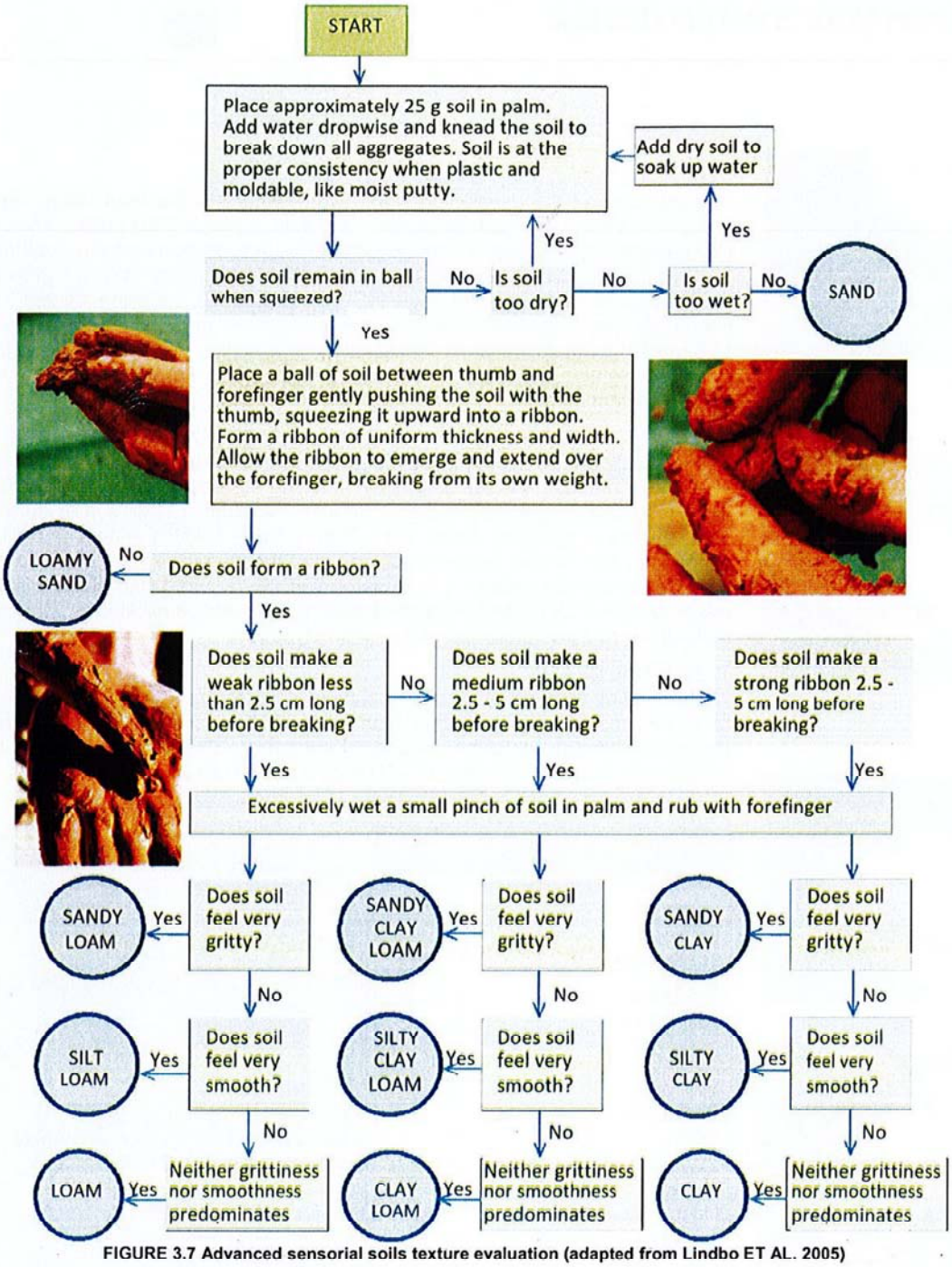


FIGURE 3.7 Advanced sensorial soils texture evaluation (adapted from Lindbo ET AL. 2005)

More information can be found at the Soils Society of America https://www.soils.org/ and the North Carolina Department of Public Health http://ehs.ncpublichealth.com/oet/docs/cit/oswpmod/Chapter4-Section6.pdf

USAID FROM THE AMERICAN PEOPLE | psi | PATH | WSUP Water & Sanitation for the Urban Poor

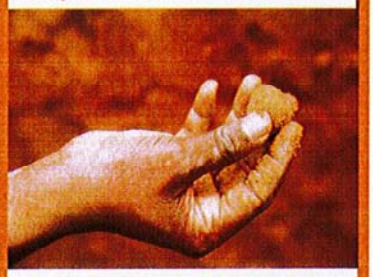
TECHNICAL BRIEF

SSD #002 * FEBRUARY 2017

CONDUCTING SOILS EVALUATION FOR ON-SITE WASTEWATER SYSTEM DESIGN

Determining soil texture is the first step in calculating the Long-Term Acceptance Rate (LTAR) of effluent into the soil.

Septic tank with surfacing effluent, Abidjan, Cote d'Ivoire.



A soil sample is taken at a depth of about 1 meter, it is mixed with water and rolled into a ball to begin the textural analysis.

Measure soil ribbon length.

Soils are then wetted to determine sand, silt and clay content.

THE PROBLEM

In many parts of the developing world, wastewater effluent from failing septic tanks and undersized leaching systems pose an environmental health threat. In the urban slums of Abidjan in Cote d'Ivoire, unsafe sanitation systems contribute to diarrhea and cholera, which are persistent health threats.[1] While significant resources have been spent on reducing open defecation, surfacing effluent from poorly designed systems brings pathogens back into close contact with community members, posing a significant risk of disease. However, with correctly designed systems, soils can be used to safely disperse wastewater effluent into the environment.

ISSUES AND OPPORTUNITIES

Even in densely populated urban slums, there is often adequate space for installing appropriately sized soil-based leaching systems. Proper design of on-site wastewater treatment systems requires evaluating the soil texture to calculate the Long-Term Acceptance Rate (LTAR),[2] which is the amount of wastewater that can be applied each day over the long term to a square foot of soil. This information allows you to determine the required size of the effluent leaching system. A properly-designed system can function for at least 20 years, making the cost per family, per day, extremely low.

TECHNICAL DETAILS

The procedure for conducting soil evaluations accurately and without a laboratory or expensive soil sieve is presented on the back of this page. The soil texture is the predominant factor in the capacity of the soils to disperse effluent. Use this simple table below to determine LTAR based on soil texture:

Soil texture		LTAR Liters/m²/day
Sand		40
Loamy sand		40
Sandy loam		28
Loamy sand		28
Silty loam		18
Silty loam		18
Sandy clay loam		18
Clay loam		18
Silty clay loam		18
Sandy clay		10
Clay		10
Silty clay loam		10

To calculate the size of the required disposal field, simply divide the daily flow (Q) by the LTAR.
That provides the amount of surface area required for the trenches or pits:

Q / LTAR = Area. If trenches, area is the side walls and bottom.

If pits, use the formula: 2 x π x radius x depth.

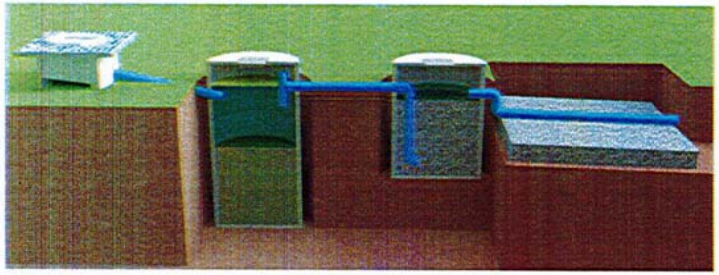
Example: Q = 500 liters / day
Soil is sandy loam. LTAR = 28 l/m²/day
Area = Q / LTAR = 500 / 28 = 17.8 m²
Area = 2 x π x radius x depth, or
17.8 / 2 x π x .5 = depth, or
17.8 / 3.14 = 5.6 meters (depth)

Consider using 3 pits, 2 meters deep each, and 1 meter in diameter.

[1] *https://www.unicef.org/cholera/files/UNICEF-Factsheet-Ivory_Coast-EN-FINAL.pdf*

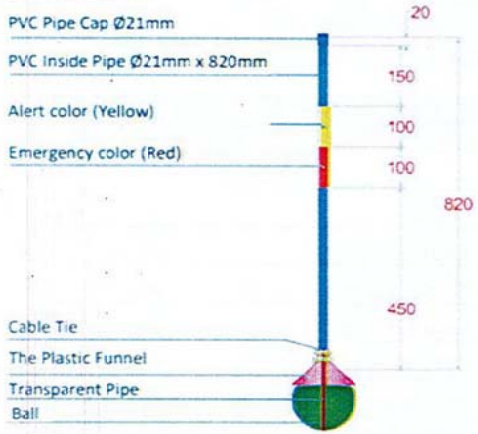
[2] *Robbins, David M., and Grant C. Ligon. How to Design Wastewater Systems for Local Conditions in Developing Countries. IWA Publishing, 2014.*

Station 1. Pit latrine and Leach Field



Function and Performance of Pit Gauge (option 1)

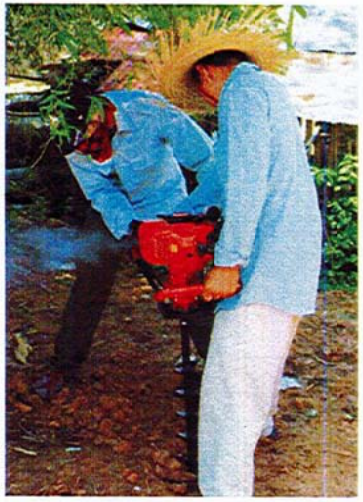
Inside Pipe Detail



Since construction the pit has filled 43 cm

At this rate this pit would fill in less than 300 days

Station 2. Groundwater Monitoring



Early October household distance from ground to high groundwater level:

HH	#1	#2	#3	#4	#5	#8	#9
metre	.36	1.1	1.0	1.0	0	0.85	0.1

#10	#11	#12	#13	#14	#15	#16	#17
0.83	1.0	1.5	1.4	1.1	1.4	1.6	1.5

3. Sampling from the pit latrine, filter pit and leach field

Location		Sampling Parameters
Existing Pit	Settled sewage	BOD, TSS, Faecal Coliforms
Filter Pit	Filtered water	BOD, TSS, Faecal Coliforms, Alkalinity, Nitrate
Leach Field	Infiltrating water	BOD, TSS, Faecal Coliforms, Nitrate
Soil	i) Around Existing Pit ii) Above Leach Field	Faecal Coliforms

Why do we take these samples?

What are the risks of failure?

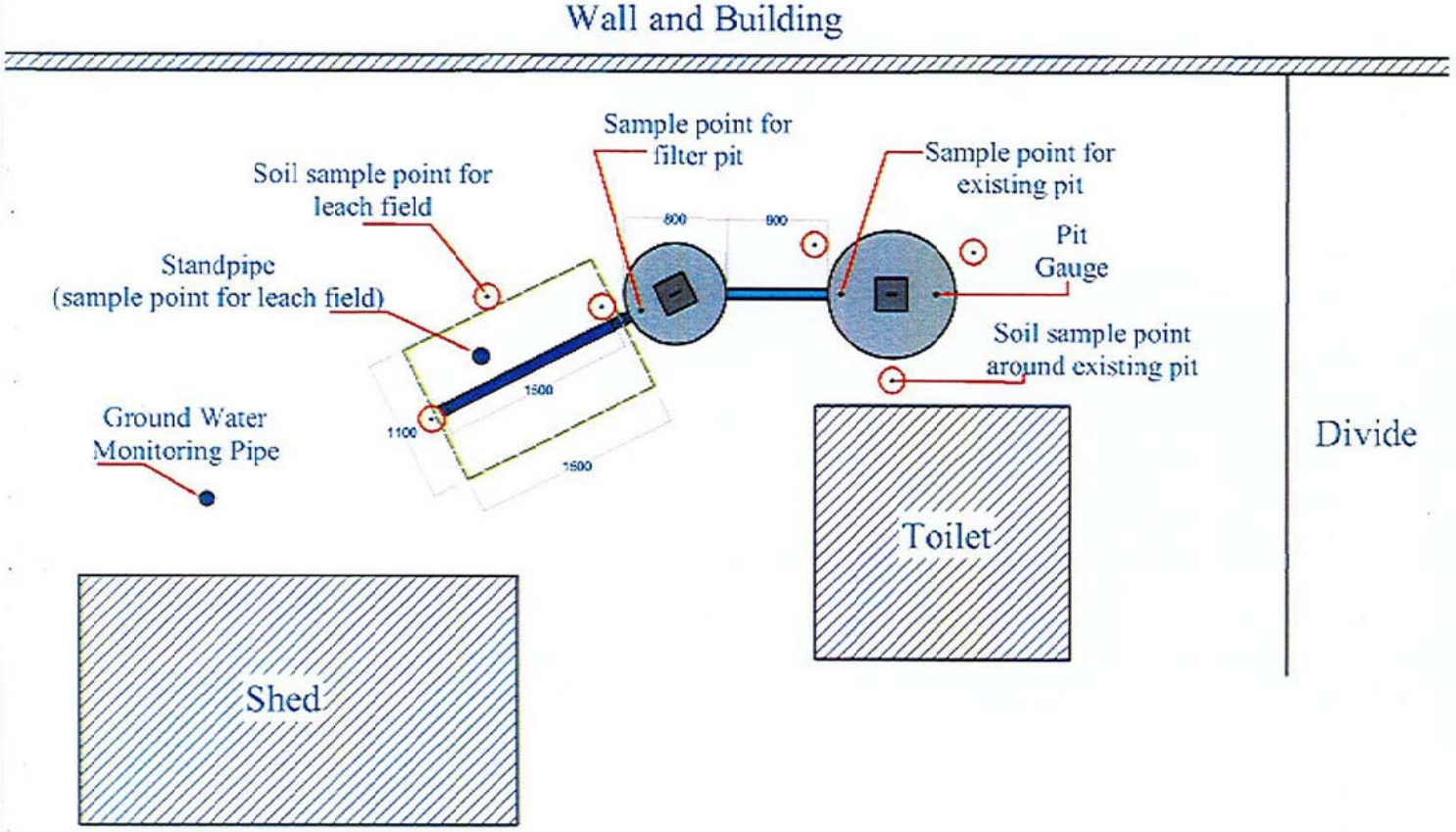
4. Soil texture testing

I think this soil is:

Soil component	%
Clay	
Coarse Silt	
Fine Silt	
Coarse Sand	
Fine Sand	

On average a household will flush _____ L/d

Soil texture		LTAR Liters/m²/day
Sand		40
Loamy sand		40
Sandy loam		28
Loamy sand		28
Silty loam		18
Silty loam		18
Sandy clay loam		18
Clay loam		18
Silty clay loam		18
Sandy clay		10
Clay		10
Silty clay loam		10


Wall and Building
Sample point for filter pit
Sample point for existing pit
Soil sample point for leach field
Standpipe (sample point for leach field)
Pit Gauge
Soil sample point around existing pit
Ground Water Monitoring Pipe
800
800
1500
1100
1500
Toilet
Shed
Divide

TACTIC REPORT

Reaching Open Defecation Free Status with grassroots partnerships.

How can we reach Open Defecation Free status with market-based sanitation approaches? First, know your context and develop grassroots networks.

Context

Rural Cambodia has achieved a remarkable expansion of basic sanitation coverage in the past decade. In iDE program areas, household-level coverage has increased from 23% in 2009 to around 70% in 2019. To date, iDE Cambodia's Sanitation Marketing Scale-Up (SMSU) program has facilitated the sale and delivery of over 310,000 sanitary latrines to rural households, enabling over 1.4 million individuals to gain access to sanitation. However, there is still much work to do, as the vast majority of the country has not yet reached Open Defecation Free (ODF) status.

In Cambodia, the requisites for ODF villages are

1. 100% families do not practice open defecation (OD)
2. At least 85% households (HH) have access to basic sanitation
3. All households dispose of infant feces into owned and shared latrines
4. There is no evidence of human excreta in the village environment
5. All households access to handwashing facilities (water and soap)
6. Community has initiated informal or formal actions against open defecation.

Project Background

The goal of SMSU3's new Public-Private Partnership (PPP) Department is to complement iDE Cambodia's traditional sanitation marketing activities by accelerating the achievement of Open Defecation Free (ODF) status at the village level.

By facilitating connection and collaboration between latrine business owners (LBOs), civil society (NGOs), and government, the PPP Department aims to support the further development of a sustainable sanitation ecosystem, to and beyond ODF status. The PPP team operates in communes with sanitation coverage over 85%. These high coverage areas are deemed to be nearly at the threshold for ODF and are the ones who can use the most immediate support to reach this designation.

In each commune where it works, the PPP Department mobilizes resources to identify and address the issues preventing the last remaining households without latrines from owning one. Barriers to household latrine purchases - which include living in a "challenging environment" (high groundwater, flood-prone, hard ground rock), seasonal migration that makes household engagement difficult, and poverty itself - vary immensely from community to community but typically affect the most vulnerable. The goal of the PPP Department is to support villages to overcome these challenges and reach ODF status by first identifying barriers, then facilitating connections between local latrine suppliers and the village, coaching local "Sanitation Champions" to find context-specific solutions, and ultimately by supporting local authorities to confidently file ODF claims to the relevant commune or district-level administrative bodies.

Local latrine business owner, Village Chief, and Assistant Village Chief sign a referral agreement with the support of an iDE Village Mobilizer.

Intervention

Step 1: Commune Activation

The work of the field-level PPP staff, the Village Mobilizers (VMs), begins with "Commune Activation." This process entails the VMs meeting with the Commune Council, including the representative from the Commune Committee for Women and Children and the Commune Chief. During this meeting, the VM explains the Commune Activation process, the goals of iDE's sanitation marketing program in general, and the program's relevance to national policy and the SDGs. The VM formally requests the support of the commune to operate in the subordinate villages while designating the CCWC representative and village-level authorities as "Sanitation Champion" focal points. If permission is secured from the commune and the CCWC, the commune activation process is considered complete.

Step 2: Village Activation

Once a commune is activated by the PPP team for ODF development, the commune-level Sanitation Champion supports iDE VMs to identify village-level Sanitation Champions, usually from the ranks of village authorities or influential village members. After these focal points are established, they support VMs to conduct a census of every non-latrine user in each village. This census collects household data including sanitation coverage, poverty status, household demographics, sanitation behavior (i.e shared latrine prevalence), and residence status (i.e. identification and categorization of emigrated households). This process includes village mapping, household identification through GPS points in addition to interview-based profiling of the individual circumstances of every household without toilet access. The interviews are geared towards making an assessment of the reason why the household hasn't yet invested in a toilet. This activation census is shared with the local authorities and serves as an ODF development baseline, upon which VMs, Sanitation Champions, and the community can plan activities and measure progress towards ODF.

Next, VMs facilitate a meeting between the Sanitation Champion and a local LBO, during which a commercial "Referral Agreement" (developed by the program) is discussed and signed. This agreement formalizes the stipulations and compensation for any successful sales referral from the Sanitation Champion to the LBO. This grassroots public-private partnership instrument aims to support the development of continuous and sustainable supply and demand channels for rural sanitation.

Step 3: Training, coaching, and problem solving

At this point, iDE VMs begin their role as coaches for Sanitation Champions to guide their communities to ODF. A half-day training session is held as a "kick-off," including the CCWC representative and usually about three village members including the designated village-level Sanitation Champion. During this session, the VM leads the group through a presentation and role-plays on how to conduct household visits and have conversations with families about their sanitation needs and barriers. Community members are guided through ways to overcome certain barriers, including linking poor households to iDE-offered targeted subsidies, connecting non-poor households to LBOs that offer payment installment plans, and other methods like incremental saving for potentially more expensive technology options. The training also includes role-plays on how to reach households with decision makers who are working abroad or far away from home, which necessitates making cold calls in a compelling and non-invasive way. VMs give the Sanitation Champions tools including a booklet for tracking village increases in sanitation coverage, which are reviewed and used for verification by VMs at regular intervals. Usually twice a week, the VM will follow up with the Sanitation Champions, either by phone or in person, to discuss challenges, reinforce training messages, and continue to track village and commune progress towards ODF.

Step 4: Prepare and Claim ODF

The final component of each VM's engagement with a village is to support the top village authority (who is often the village-level Sanitation Champion) to officially claim her/his village as ODF to the Commune Council. This claim will flag that the village is ready for ODF verification, which happens at a commune-wide scale after all villages have filed their official ODF claims.

The VM supports the Sanitation Champion (and also the Village Chief if she/he isn't the same person), on how to calculate sanitation coverage rates, produce a village report (which includes conducting transect walks and gathering observation and interview-based information from village members), and to file this report in the form of a village ODF claim with the Commune Council.

In addition, iDE is currently collaborating with iDesign (iDE's in-house research and design consultancy) to develop a training module on infant/child feces disposal and handwashing, which are two key components of ODF in Cambodia. This training is to be delivered by VMs to Sanitation Champions on hand washing promotion and sustained sanitation promotion. This module is being constructed using iDE's sales promotion insights and a wealth of knowledge gained from four large projects iDesign has conducted on hand washing behavior change in Cambodia in the past two years. The key aims of this training are to equip Sanitation Champions to effectively promote non-sanitation-

related components of Cambodia's definition of ODF in order to continuously promote and maintain sanitation coverage after the village and commune are officially recognized as ODF.

Implementation and Impact 2018-2019

In the latter half of 2018, the Program Director and National PPP Manager designed and documented the key procedures defining the standard operating model for this new intervention. The program's PPP intervention was trialed in November 2018, with a limited team of two Village Mobilizers (VMs) under the direct supervision of the National PPP Manager. The district of Romduol, Svay Rieng province, was selected because its high coverage rate (84%) makes it an ideal territory to support for ODF achievement. It is important to note that iDE's large-scale sanitation marketing intervention continually and concurrently operates within and outside PPP Department intervention areas.

By the end of June 2019, PPP operations had scaled to three total provinces and recruited 13 Village Mobilizers, two of whom were promoted in June to PPP Province Managers. To date, the PPP Department has completed 215 Village Activations in 35 communes. As a result, 250 Sanitation Champions have been engaged, of whom 48% are women (including 84 women at the village level and 35 women from Commune Committees for Women and Children). At this time, with the support of iDE, 156 villages have filed ODF Claims. On July 31, 2019, Romduol district was formally declared Open Defecation Free, making it the third district in Cambodia to reach this designation.

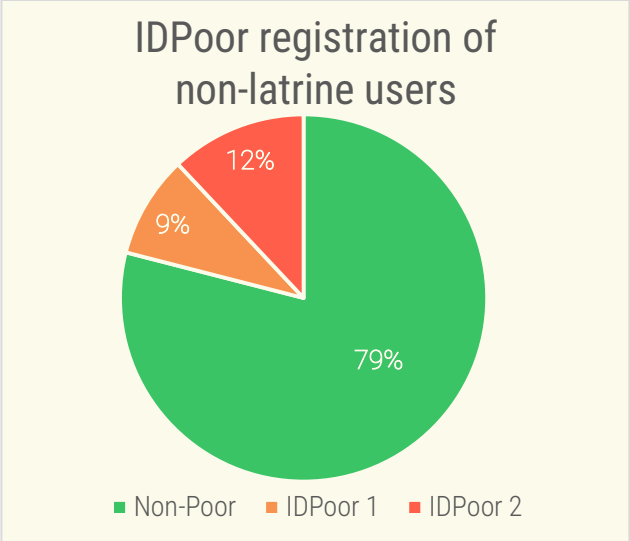
July 31, 2019 marked the Romduol District, Svay Rieng Province ODF Declaration Ceremony. Over one thousand locals, government officials, NGO and business partners participated in the event.

Findings from the PPP Department's Non-Latrine User Census Survey

Findings from the census conducted by the PPP Department in high sanitation coverage villages provide insight on the challenges faced by the remaining few and most vulnerable households without latrine access. These findings are derived from interviews of 3,124 non-latrine user households in 215 villages residing in communes with household sanitation coverage over 90% in Svay Rieng, Kandal, and Prey Veng provinces. The survey reveals that the outstanding "laggard" market in high coverage areas is much more diverse than often assumed: poverty and financial obstacles are not as prevalent among non-latrine owners as one would expect at this late stage of the market's development.

Poor vs Non-Poor

21% of non-latrine users in the sample are registered as IDPoor.[1] In iDE's operating areas, approximately 17% of the general population is registered as poor. This implies that the remaining unserved market segment is comprised of a moderately higher proportion of poor households than the general population itself. However, this also indicates that 79% of the unserved population in these areas is not registered as poor. This finding stands in contradiction to commonly held perceptions that, at this stage of sanitation coverage, most remaining non-latrine owners are poor.

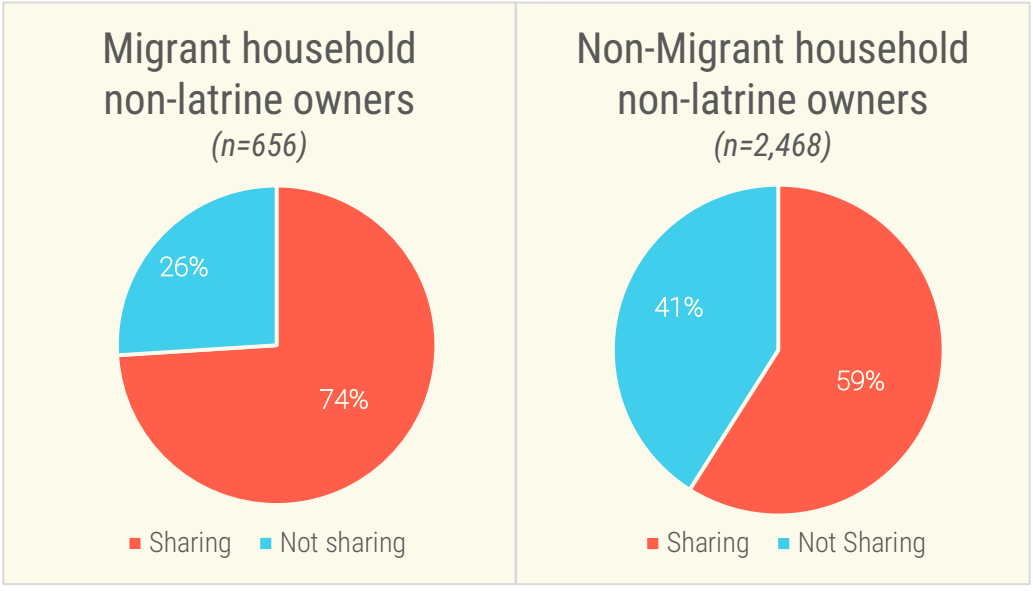


Open defecation vs sharing

62% of non-latrine users report sharing a latrine. The remainder report that they generally don't use a latrine and are open defecating. Within this 62% who share a latrine, 18% are poor and 82% are non-poor.

Migrant workers

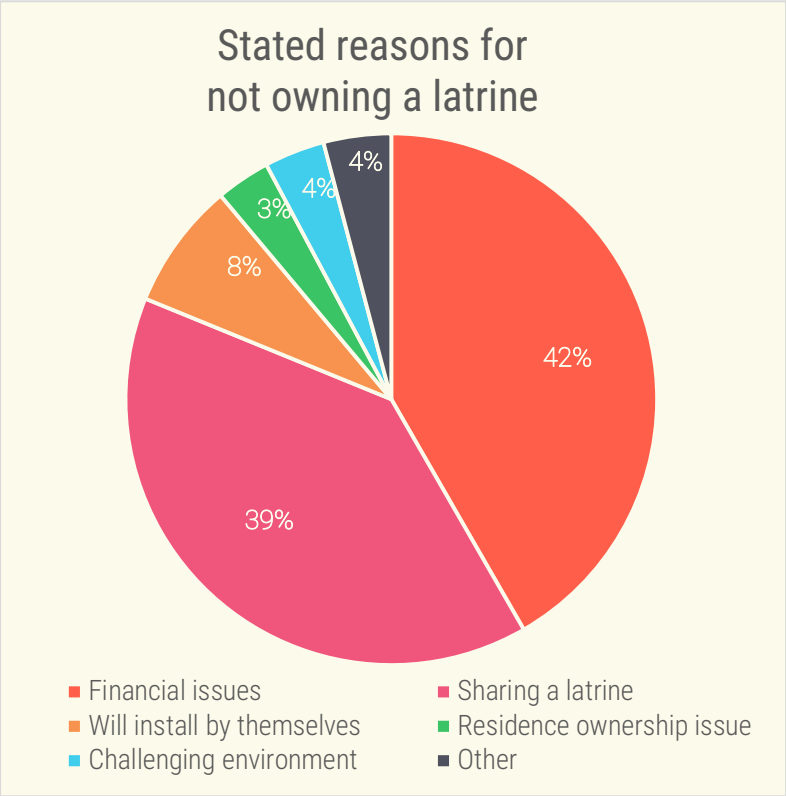
21% of non-latrine user households have decision makers who are migrant workers who are usually away from the village, whereas 79% have decision makers that all live and work in the same village. Of those who migrate, 89% are short-term migrants (away for less than six months) and 11% are long-term migrants (away for more than six months). Households with short-term migrant decision makers, who represent a significant 19% of the laggard market, are generally very difficult to meet and represent a challenging population segment for sanitation marketing efforts. Long-term migrants represent about 2% of the laggard market. In addition, just 12% of ID poor households have decision makers who migrate for work, which leaves significant opportunity to engage non-migrant poor households in their villages. Interestingly, households with migrant decision makers appear to be more likely to use shared latrines than those with non-migrants. 74% of all migrant households without latrines appear to be sharing, whereas 59% of non-migrant households claim to be sharing.



[1] The IDPoor System is an initiative administered by the Cambodian government that identifies poor households, assesses their level of poverty (IDPoor 2 is poor, IDPoor 1 is poorest), and distributes identification cards for these households.

Reported reasons for not owning a latrine

42% of non-latrine users claimed that the reason they have not invested in a toilet is related to financial issues. Main financial issues reported include outstanding debt and/or irregular incomes. Although financial issues do represent the largest amount of households who have not purchased a latrine, it is often assumed that all laggard, non-latrine users are facing a financial barrier. We find that the stated reason is non-financial in 58% of cases, with justifications including preferring to share a toilet (39%), intention to install a toilet by themselves (8%), living in a "challenging environment" (including but not limited to flooded, hard ground rock, or high ground water areas), and lack of home ownership (3%) among other reasons. This indicates that financial interventions such as subsidies or micro-financing are not and cannot be universal solutions to reach ODF status.



iDE Cambodia

Phone: (+855) 23 223 541
E-mail: Cambodia@ideglobal.org

Tyler Kozole
Innovation Manager, iDE Cambodia

iDE Global WASH Initiative

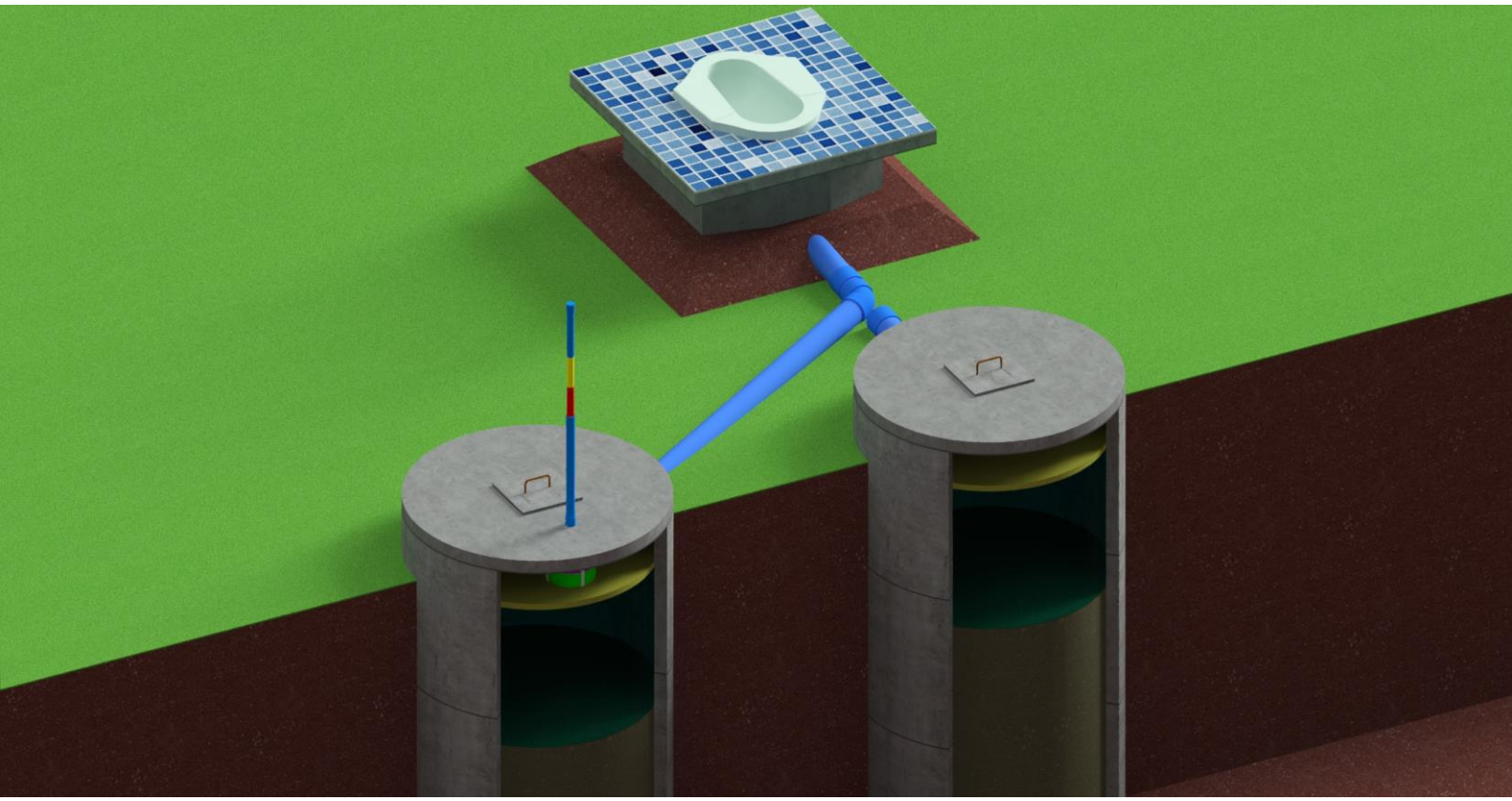
Read more: https://washmarkets.ideglobal.org

E-mail: wash@ideglobal.org

Australian Aid
Water For Women
The Stone Family Foundation

TACTIC REPORT

Addressing Fecal Sludge Management in Rural Locations



Pit latrines have become the solution for rural sanitation in many of the world's poorest, remote, and difficult to access locations. At some point in time, the pit fills. What can households in these areas do to safely manage their sanitation needs?

Context

As sanitation coverage increases across the globe, fecal sludge management (FSM) is becoming increasingly important as the next sanitation issue that needs to be addressed. Most FSM solutions are designed for urban environments and involve collection (by vacuum truck or manual emptying) and mass treatment (e.g., ponds, aerobic digesters). For rural communities and households in Cambodia, these solutions present both economic and logistical challenges. Households in some areas have been able to manage their pit emptying issues with the service of pump trucks that come directly to the household. However, these solutions are still relatively expensive, are sometimes unable to navigate rural roads, and many hand-made varieties of these trucks lack the ability to hygienically remove and transport waste. As motor-powered pumps are becoming cheaper, households are increasingly opting to use these over manual emptying with buckets. Yet despite increasing availability of pumps and trucks, waste disposal is rarely handled

safely. In rural areas, the cost of constructing and maintaining a safe, hygienic treatment collection plant is prohibitive. The economies of scale that enable mass waste treatment plants to operate sustainably in urban areas are simply not available in rural villages. Additionally, regulation and enforcement of standards that would ensure health and safety in treatment plants are currently lacking in the Cambodian context. However, rural latrine users do typically have at least one advantage over their urban counterparts: adequate space to build a second pit.

> ""My son is going to marry next month at my house. I need to have a new pit, as you know many people will come to my house for the wedding party. That is why I bought a new pit from the sales agent."
>
> Mr. Mol (about 50 years old)

Background

In 2009, iDE set out to improve national sanitation coverage in Cambodia, which stood at 29% after sluggish growth of less than one percent annually for the preceding 20 years. Nearly ten years later, the Sanitation Marketing Scale-Up (SMSU) program is the largest of its kind globally and sanitation coverage nationwide has surpassed 70%.[1] To support and facilitate the growth of the sanitation market, iDE trained entrepreneurs to become latrine business owners (LBOs), providing them the design for the Easy Latrine, a simple affordable, attractive, pour flush pit latrine. iDE supports these entrepreneurs with demand generation by managing a team of professional sales agents. To date, iDE Cambodia's SMSU program has facilitated the sale and delivery of over 310,000 Easy Latrines to rural households, enabling over 1.4 million individuals to gain access to sanitation. As the sanitation market in Cambodia has matured, iDE has developed additional products beyond the Easy Latrine. Currently, the program is facilitating the sale, delivery, and installation of four different latrine shelter models and an alternating latrine pit upgrade.

Intervention

For an average household in Cambodia, a pit latrine can take between one and eight years to fill. Once filled, the solution in urban areas is to vacuum pump out the fecal sludge, but this option is not always feasible for rural communities based on cost and accessibility. And, if the pit is emptied,

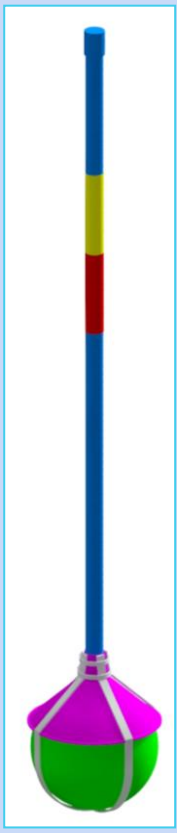
[1] Cambodia Socio-Economic Survey. Phnom Penh: NIS; 2018

in virtually all cases, the waste is handled and disposed of unsafely.[2] To address this issue, in 2017 iDE began piloting sales of its Alternating Dual Pit (ADP) product, which is essentially an extra pit to which the pan can be diverted.

The second pit increases the household's capacity to deal with waste, effectively doubling their sanitary waste storage. Switching to the new pit allows the fecal sludge in the old pit to decompose, drying over time and reducing exposure to fresh excreta. Dried sludge that has been left in an undisturbed pit for two years should be relatively safe to handle (although care should still be taken to minimize contact).[3] This dried sludge is not hazardous to the environment, and can safely be used for agricultural purposes to add humus and fiber to the soil, promoting plant growth. When iDE-affiliated business owners install an ADP, they first treat the old pit by mixing in hydrated lime. Research iDE and others have conducted on hydrated lime indicates that, if effectively mixed into sludge, this can significantly reduce pathogens and improve the agricultural benefit of human waste.[4] After the old pit is treated, it is sealed and the new pit is connected.

Some variations of similar, twin-pit latrines in the rural sanitation sector have included a junction box with a valve switch to enable households to manually switch connections back and forth between pits every time one fills. However, in iDE's experience across its portfolio, this type of junction box, which is typically left unused for years, is often jammed and unmovable by the time that households need to switch their connection. With this in mind, iDE made the decision to de-engineer

The Pit Gauge: A nudge towards FSM behavior change



During the ADP pilot iDE developed and tested the Pit Gauge product to attempt to trigger households to buy an ADP. The research yielded qualitative indications that the Pit Gauge helped to increase ADP sales but the quantitative assessment was inconclusive due to experimental error.

Based on user feedback and observations during the pilot, the program redesigned the Pit Gauge before the ADP scale-up process began in late 2018. The original design was intended to allow households to measure their pit level exactly so they could proactively, rather than reactively, plan for their FSM needs. However, iDE recognized that few households were actively measuring their pit and were generally only concerned when their pit was nearly full. The redesigned Pit Gauge functions as more of an "alarm clock," signaling to households when their pit level is approaching its capacity. The blue section rises when the pit contents have reached the topmost ring. When the ring is about half full, the yellow section, designed to catch the household's attention, becomes visible. By the time the top ring has reached its last quarter of capacity, the red color, signaling urgency or danger, becomes visible. Also, based on learning that the long PVC pole used in the original design was easily breakable, a second-generation Pit Gauge was designed with a shorter length to give it added durability.

By drawing the household's attention to its latrine pit contents in a conspicuous way, iDE's intention is for the Pit Gauge to nudge the household to start considering FSM options before it's an emergency. Additionally, a visible red band on a household's Pit Gauge could serve as a signal for sales agents to more effectively identify households in need of FSM solutions. To date, over 4,100 second-generation Pit Gauges have been sold and delivered with the ADP product.

[2] Household Pit Emptying and Sludge Reuse Practices in Rural Cambodia. Phnom Penh: Long D; PSI/World Bank; 2018.
[3] Guidelines on sanitation and health. Geneva: World Health Organization; 2018. License: CC BY-NC-SA 3.0 IGO.
[4] Faecal Sludge Management: Systems Approach for Implementation and Operation. London: Strande L., Ronteltap M., Brdjanovic D.; 2014; Household-level application of hydrated lime for on-site treatment and agricultural use of latrine sludge. Hanoi: Chakraborty I., Capito M., Jacks C., Pringle R.; 2014.

the product to its most basic level. Rather than install a junction box, the installer will simply cut the PVC pipe connection between the latrine pan and original pit, then fit a connection to the new pit. This modification significantly reduces the price compared to the junction box design. Considering the need for reconnection is limited to once every three to five years on estimate, iDE believes that customers will be willing to absorb the extra occasional labor cost of contracting out this service. With an ADP, customers can theoretically alternate pits back and forth and empty safely composted waste sustainably well into the future.

Transitioning construction businesses to sanitation businesses

When iDE began its sanitation marketing work in 2009, the first step was identifying market actors who could manufacture and install latrines for rural customers. Because the Easy Latrine was based on the standard concrete rings that had been used for years for irrigation and water storage, existing concrete producers became the natural choice to receive latrine manufacturing training and assistance.

In 2017, for the first time since iDE's program began, LBOs reported a reduction in income from latrine sales. The shrinking profit from first-time latrine sales is due in large part to market saturation as latrine coverage rates get closer to 100%. For some LBOs, latrines make up as much as 80-90% of their overall profit, so a decline in sales is sharply felt. However, this business pressure appears to be nudging some LBOs towards adopting a new sanitation solver mindset. Indeed, iDE has seen that its network of affiliated LBOs has been generally enthusiastic about expanding sanitation offerings to products like the ADP as they are increasingly faced with the Easy Latrine's declining profit potential.

While many of these entrepreneurs have been happy to expand their business model, many continue to see their role as primarily construction. One of the challenges in upgrading an existing latrine to an ADP is that it requires the existing pipe between the latrine pan and pit to be cut and the first pit sealed. Invariably, this means that workers have to deal with feces and urine that may remain in the pipe or seep out from the pit (especially if the pit has already started to overflow). Resistance to this type of work initially led to a higher than normal rate of turnover among latrine businesses. Recognizing this issue, iDE put a high degree of attention towards improving the installation process to reduce contact with pit contents. For example, one of the first parts of the process is to drain water that may be under pressure inside the pit to avoid spraying or fast leakage when the connection pipe is cut. The pit is drained by making a small puncture in the old pit and allowing excess fluid to drain through a trench that leads into the hole dug for the new pit. The toilet is then flushed several times to wash the inside of the connection pipe before cutting.

These types of user-centered modifications to the installation process reduce the risk and general disgust associated with the installation of an ADP. In addition to installation and design improvements, iDE also increased support for businesses on ways to increase staff retention, provide workers with adequate protective clothing and equipment, and better follow the installation protocol. This support has nullified the increase in turnover that the program witnessed when the ADP product was first introduced to LBOs.

Implementation and Impact: 2017-2019

iDE's sales team sells the ADP with a combination of group sales presentations and direct sales presentations. Group sales presentations are done first to get the community together, flag the problem as a community issue, and make a first advocacy push. Sales agents then go around the village and conduct door-to-door, direct sales presentations. Often sales agents will visit households that were at the group presentations but did not buy. Sales presentations focus on evoking a sense of immediate danger from overflowing latrine pits, both for the household and the community. Sales agents regularly use themes like keeping your family and neighbors safe from "merok," the term used to describe things that make you ill.

Throughout the pilot, between December 2017 and May 2018, three iDE-affiliated LBOs delivered 158 ADPs in Meun Chey Commune, Romduol District, Svay Rieng Province. In October 2018, after revising the product and installation process based on pilot learnings, iDE began to scale the ADP product within its five main operating provinces: Siem Reap, Kampong Thom, Kandal, Prey Veng, and Svay Rieng. As of the end of July 2019, 44 LBOs have delivered a total of 4,325 ADPs.

DEFINITIONS

LBO — latrine business owner. Independent entrepreneurs with the technical capacity to manufacture simple latrine components (e.g., concrete rings) and procure other supplies (e.g., PVC pipes, latrine pans) and install latrines and shelters.

FSM — fecal sludge management. The hygienic collection and treatment of human feces.

iDE Cambodia
Phone: (+855) 23 223 541
Email: cambodia@ideglobal.org

Tyler Kozole
Innovation Manager

iDE Global WASH Initiative

Read more: https://www.ideglobal.org/areas-of-focus/wash. Also read about iDE Cambodia's work building value chains and business models in agriculture, clean water, and sanitation: https://www.ideglobal.org/cambodia

E-mail: WASH@ideglobal.org

TACTIC REPORT

Reaching the poorest with sanitation through targeted subsidies.

How can we reach the poorest with sanitation without distorting and damaging the market? Carefully targeted, verifiable subsidies.

Context

Rural Cambodia has achieved a remarkable expansion of basic sanitation coverage in the past decade. In iDE program areas, household-level coverage has increased from 23% in 2009 to around 70% in 2019. To date, iDE Cambodia's Sanitation Marketing Scale-Up (SMSU) program has facilitated the sale and delivery of over 310,000 sanitary latrines to rural households, enabling over 1.4 million individuals to gain access to sanitation. However, estimates by iDE indicate that in SMSU implementation areas, around 21% of the remaining market is comprised of poor households that may not be able to afford a latrine at market price.[1]

Financial support to increase the affordability of latrines will be needed to reach these poor households. Microfinance has historically offered a potential solution, however, in Cambodia, microfinance for sanitation has become increasingly unavailable. New lending regulations and total loan indebtedness by poor households have made the prospect of supporting latrine sales with microfinance an option with limited appeal. Other types of creative, non-interest-bearing financing models like payment instalment plans and rotating savings and loans groups may offer a potential solution, however these approaches have not yet shown to be effective at reaching scale in Cambodia.

[1] iDE Non-Latrine User Census, 2019

In line with the Cambodian Ministry of Rural Development's guidance, targeted subsidies are another viable option to responsibly support sanitation investment by poor households without distorting or damaging the local market ecosystem. However, globally subsidy distribution is often mishandled. As noted in a recent World Bank report, WASH subsidies can often be pervasive and poorly targeted, non-transparent, expensive for practitioners, and distortionary for markets.[2] Cognizant of these issues, iDE has developed a targeted subsidy model that mitigates these common risks for implementation.

Project Background

In November 2015, iDE launched a Targeted Subsidy Pilot in three districts in Kandal province. In collaboration with Amplify Markets and Causal Design, the program looked at an innovative delivery mechanism for targeted subsidy through a micro-credit scheme. Government-identified IDPoor households were targeted through regular sales events and were able to purchase latrines at a discounted price.[3] Instead of creating a standalone subsidy program, which can be inefficient and costly to administer, the pilot offered discounted latrines alongside market-priced latrines with the option of financing for all approved purchasers.

The Targeted Subsidy Pilot leveraged the existing iDE sales agents, supply chain, and micro-financing partner (from our financing pilot). Through this pilot, iDE hoped to build on best practices and develop a scalable strategy to serve the rural poor with targeted subsidies and loans while ensuring long-term engagement of the private sector.

The study found uptake rates among poor households that were offered subsidies increased by 14 to 16 percentage points compared to the control group, while there was no significant effect on non-poor households. Additional analyses show that lower baseline coverage rates may be associated with lower non-poor latrine sales, suggesting that implementers should delay the introduction of subsidies until markets have matured in order to minimize distortions. Interestingly, cost effectiveness of the program (measured in cost to program per latrine sold) was actually higher because more latrine sales (with subsidies) occurred in the target areas.

In 2018, building on the experience of the Kandal pilot, iDE Cambodia designed a scalable and operational targeted subsidy mechanism to introduce to the total program implementation area.

Intervention

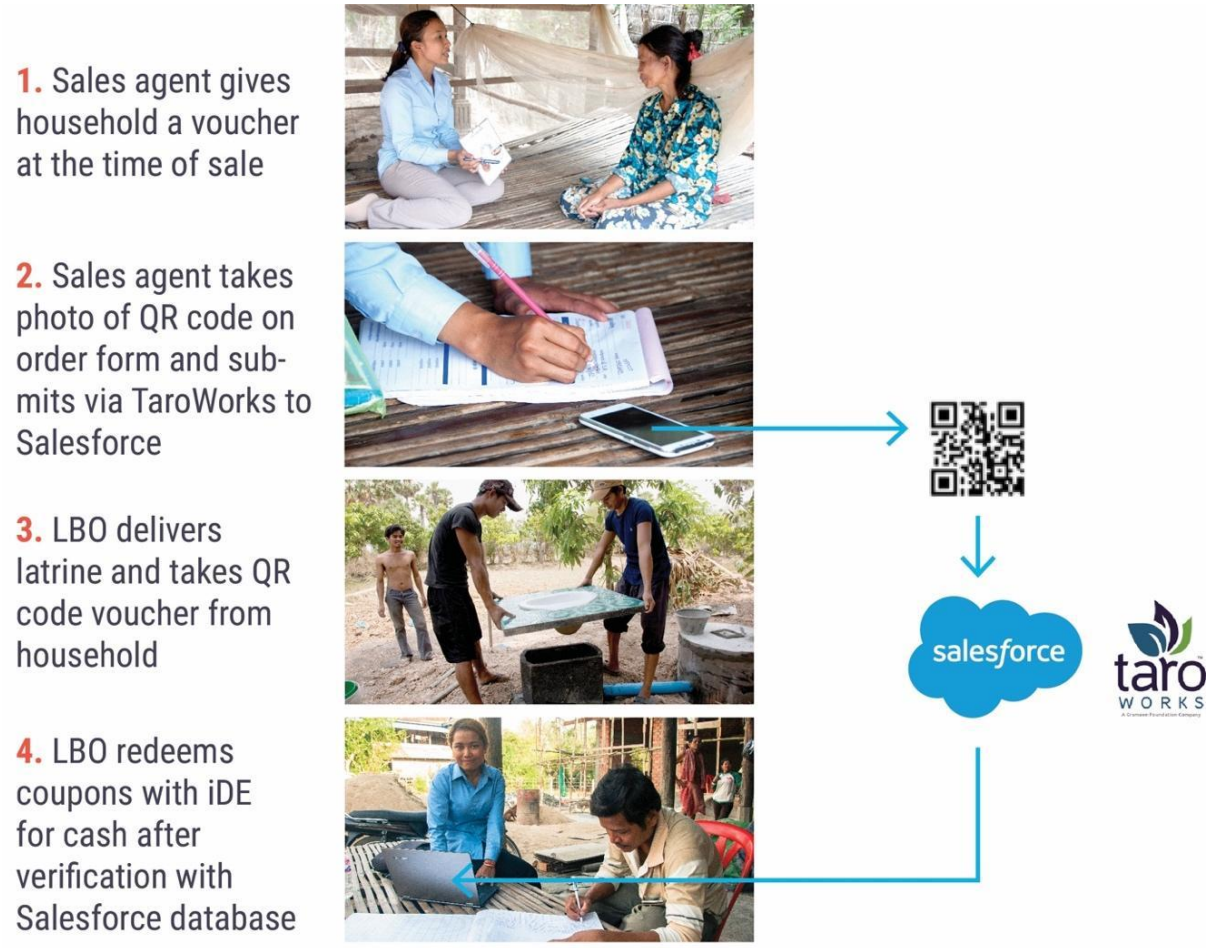
Critical components of the targeted subsidy operating model include a system for subsidy eligibility verification and an efficient delivery process that provides transparency, traceability, and auditability at scale for a reasonable transaction cost. In provinces with sanitation coverage over 67%, the program delivers subsidies at two levels that respectively correspond with IDPoor 1 and 2 status. In this model, IDPoor 1 households receive a $25 USD subsidy voucher, reducing the price of an Easy Latrine to $30, and IDPoor 2 households receive a $20 subsidy that brings the retail price to $35. In addition, the program has applied the targeted subsidy mechanism to a low-cost, temporary shelter product with a retail price of $30. Both IDPoor 1 and 2 households are able to buy this product as an add-on to their latrine purchase for $10 with a $20 subsidy provided by the program. This product is intended to serve as a temporary solution that enables households to use their latrine immediately after installation until they are able to save enough money to construct a permanent shelter structure.

In order to manage the subsidy delivery mechanism, the program expanded and deepened its management information system (MIS) infrastructure. The MIS system tracks the status of unique subsidy vouchers, which are given to customers at the time of sale, using QR-codes attached to each voucher. The codes allow for end-to-end, real-time traceability of each voucher from their batch creation to their eventual redemption for cash to the latrine business owner (LBO) by iDE after LBOs have delivered the latrine and iDE has verified the eligibility of the voucher. LBOs redeem the voucher by sending a picture of the collected QR-Codes to iDE's respective provincial office and the redemption claim is paid within five working days. iDE conducts random spot checks to verify latrine deliveries.

[2] https://openknowledge.worldbank.org/handle/10986/32277

[3] The IDPoor System is an initiative administered by the Cambodian government that identifies poor households, assesses their level of poverty (IDPoor 2 is poor, IDPoor 1 is poorest), and distributes identification cards for these households.

In this system, the financial controller has real-time knowledge of the number of vouchers in circulation and the total value of subsidies committed, pending cash redemption. Household subsidy eligibility is based on IDPoor status of the household. By using the IDPoor system, iDE can verify the eligibility of subsidy voucher recipients through online verification of their IDPoor card number in the National Database. By linking IDPoor status to subsidy vouchers, the program prevents any risk of fraudulent duplication of payments and enables a resolution path for re-issuing lost vouchers.



Implementation and Impact 2018-2019

The program began testing the Targeted Subsidy mechanism on December 12 through two sales agents in Svay Rieng province. The Targeted Subsidy delivery program was scaled up in January to the entire Svay Rieng sales agent team. Within the first six months of 2019, the program scaled this subsidy delivery program to all sales agents in two additional provinces: Kandal and Prey Veng. By the end of June 2019, the program had sold and delivered 2,444 latrines and 70 low-cost shelters to IDPoor households through the targeted subsidy mechanism.

Lessons Learned

- Timing is key: While subsidies proved to have a clearly positive impact on sanitation uptake by the poor, the pilot analysis also showed that lower baseline coverage rates are weakly associated with lower uptake by non-poor households. This finding suggests that implementers should avoid introducing subsidies into a market too early to avoid unintended market distortions. When setting national policy, governments and regulatory agencies should also consider at what point local markets are best able to handle targeted subsidies.
- Familiarity with the local market matters: iDE conducted this work in a geographic area where we have maintained a sanitation marketing presence over several years. Our network of experienced local sales agents and management team were invaluable to ensuring we understood the local market and were able to address operational challenges associated with administering subsidies.
- Subsidies must be well-targeted, but targeting can be a challenge: The IDPoor system in Cambodia represents an almost ideal system for targeting subsidies. While iDE recognizes that the system is not perfect and registration of households is sometimes outdated, the general population trusts it, and iDE staff and sales agents were able to use it to quickly confirm household eligibility for targeted subsidies. Such systems are not common in the developing world, so others attempting to imitate this approach will need to proceed cautiously when designing their subsidy verification and study protocols.
- Subsidies offer operational efficiencies when compared to financing: Much of the sector's energy has been focused on strategies for unlocking capital to provide financing to consumers of WASH products such as latrines. During iDE's experience with financing more generally, slow loan processing times and high rejection rates have made it difficult to operationalize sanitation financing at scale. In contrast, well-targeted subsidies can be simple and inexpensive to administer, making them an attractive alternative to financing as a means of reaching the poorest and most vulnerable.

iDE Cambodia

Phone: (+855) 23 223 541

E-mail: Cambodia@ideglobal.org

Produced by Tyler Kozole & Glen Engel-Cox

iDE Global WASH Initiative

Read more: https://washmarkets.ideglobal.org

E-mail: wash@ideglobal.org

Australian Aid

Water For Women

The Stone Family Foundation

Going Further: Hygiene Service Levels (JMP Ladder)

Under the new SDG framework, data will be monitored under the following categories: basic (facilities with soap and water), limited, and no facility (see definitions in Table 1). The results for Kampong Chhnang Province and its districts are detailed hereunder.

Table 1- JMP Service Level Definitions for Hygiene

Service Level	Definition
Basic	Availability of a handwashing facility on premises with soap and water
Limited	Availability of a handwashing facility on premises without soap and water
No Facility	No handwashing facility on premises

- Throughout the province **62.3%** of persons have basic hygiene services.
- The overall percentage shows important urban-rural disparities: **93.0%** of people have a basic hand washing facility in Krong Kampong Chhnang compared to **30.0%** in Kampong Leang, where over half of households do not have a hand washing facility.
- Though located in a rural area, **72.5%** of households in Baribour have basic hand washing facilities.

Box 4- JMP Ladder for Hygiene

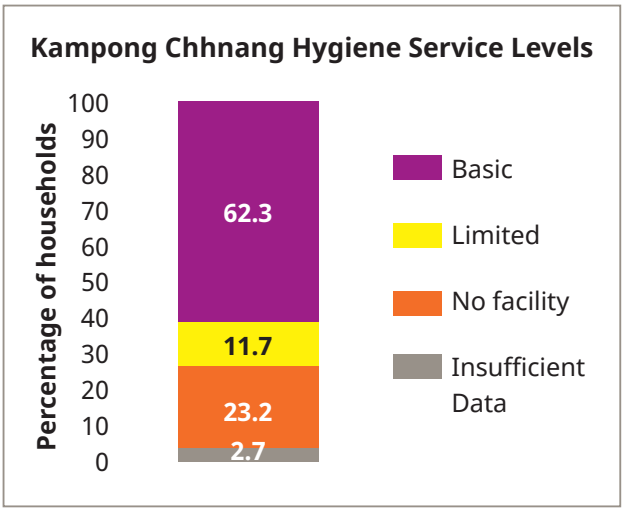


Chart 18 - JMP Hygiene Service Levels, Province

WaterAid

ទិន្នន័យការអប់រំសាកល្បងអំពីការផ្គត់ផ្គង់ទឹកស្អាត និងលើកកម្ពស់អនាម័យជនបទ (WASH)
ខេត្តកំពង់ឆ្នាំង ឆ្នាំ២០១៨

រាយការណ៍អំពីដំណើរការនិងមេរៀនបទពិសោធន៍
របាយការណ៍ចុងក្រោយ

WaterAid

ការបដិសេធ៖

ទស្សនៈនិងមតិយោបល់ដែលបង្ហាញនៅក្នុងរបាយការណ៍នេះគឺជារបស់អ្នកនិពន្ធហើយមិនឆ្លុះបញ្ចាំងពីជំហរឬ
ទស្សនៈផ្លូវការរបស់អង្គការ WaterAid ឡើយ។

សាវតានិងគោលបំណងនៃការអង្កេត

រាជរដ្ឋាភិបាលកម្ពុជាបាននឹងកំពុងបង្កើតគោលដៅអភិវឌ្ឍន៍ប្រកបដោយចីរភាពកម្ពុជា(CSDGs) និងសូចនាករដែលត្រូវបានប្រើប្រាស់ដើម្បីពិនិត្យមើលវឌ្ឍនភាពរបស់ខ្លួនដោយផ្អែកលើគោលដៅអភិវឌ្ឍន៍ប្រកបដោយចីរភាពរបស់អង្គការសហប្រជាជាតិ(SDGs)។ SDGគោលដៅទី៦ ដែលមានទំនាក់ទំនងជាមួយការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ(WASH) ហើយមានគោលបំណងដើម្បីធានាឱ្យមាននិងការគ្រប់គ្រងទឹកនិង អនាម័យសម្រាប់ទាំងអស់គ្នាប្រកបដោយចីរភាព។ ជាងនេះទៅទៀត ក្រសួងអភិវឌ្ឍន៍ជនបទបាននឹងកំពុងពិនិត្យមើលឡើងវិញនូវផែនការសកម្មភាពជាតិស្តីពីការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យជនបទ (NAP) ឆ្នាំ២០១៤-២០១៨ដោយផ្សាភ្ជាប់ជាមួយនិងផែនការសកម្មភាពខេត្តស្តីពីការផ្គត់ផ្គង់ទឹកស្អាត និងលើកកម្ពស់អនាម័យជនបទ (PAPs) និងការបង្កើតNAPដំណាក់កាលទី២និងPAPs ដំណាក់កាលទី២ ។

អង្គការWaterAid ដែលជាផ្នែកមួយនៃកម្មវិធីលើកកម្ពស់សេវាផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យប្រកបដោយចីរភាព (SusWASH) គឺកំពុងគាំទ្រដល់មន្ទីរអភិវឌ្ឍន៍ជនបទខេត្តកំពង់ឆ្នាំង ;(PDRD)ដើម្បីពិនិត្យឡើងវិញនូវបច្ចុប្បន្នភាពរបស់ PAP និងបង្កើតPAPដំណាក់កាលទី២របស់ពួកគេ។ ដើម្បីធ្វើដូច្នេះអង្គការWaterAidបានធ្វើការជាមួយវិទ្យាស្ថានជាតិស្ថិតិ (NIS) នៃក្រសួងផែនការ ក្រសួងអភិវឌ្ឍន៍ជនបទ មន្ទីរអភិវឌ្ឍន៍ជនបទខេត្ត (PDRD) និងមន្ទីរផែនការខេត្ត (PDP) និងក្រុមការងាររអង្កេតដើម្បីរៀបចំការអង្កេតសាកល្បងទិន្នន័យអំពីស្ថានភាពផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ(WASH)ឆ្នាំ២០១៨នៅក្នុងខេត្តកំពង់ឆ្នាំង។ ការប្រមូលទិន្នន័យនៅសហគមន៍ត្រូវបានបញ្ចប់តាមរយៈការសម្ភាសន៍តាមគ្រួសារនីមួយៗដោយមានសំណាកគំរូគ្រួសារចំនួន២,៤៦០នៅក្នុងភូមិចំនួន១៦៤ នៅគ្រប់ស្រុកនិងក្រុងទាំងអស់ក្នុងខេត្តកំពង់ឆ្នាំង។

ដំណើរការនេះអនុវត្តតាមគោលបំណងពីរ៖

i. ដើម្បីផ្តល់ទិន្នន័យដើមគ្រានៃកម្រិតសេវាកម្មWASHនៅទូទាំងខេត្ត ដែលនឹងត្រូវដាក់បញ្ចូលនៅក្នុងការពិនិត្យឡើងវិញប្រចាំឆ្នាំនៃPAP និងNAP គាំទ្រដល់ការបង្កើតដំណាក់កាលបន្ទាប់នៃPAP និងផ្តល់ជូននូវអាទិភាពកម្មវិធីWASH។

ii. លើសពីការប្រមូលទិន្នន័យ ការអង្កេតសាកល្បងមានគោលបំណងកសាងសមត្ថភាពអាជ្ញាធរនៅថ្នាក់ខេត្តនិងស្រុកក្នុងការប្រមូលនិងពិនិត្យតាមដានទិន្នន័យស្តីពីការគ្រប់គ្រងទឹកស្អាតនិងលើកកម្ពស់អនាម័យប្រកបដោយសុវត្ថិភាព ក៏ដូចជាការកសាងសកម្មភាពរួមគ្នានិងការចូលរួមរបស់អ្នកពាក់ព័ន្ធវិស័យទឹកស្អាតនិងលើកកម្ពស់អនាម័យ(WASH)ជុំវិញការពិនិត្យតាមដានទិន្នន័យរបស់ WASH ។

វិធីសាស្ត្រពហុអ្នកពាក់ព័ន្ធ

ការអង្កេតសាកល្បងពីស្ថានភាពផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យគឺជាលទ្ធផលនៃវិធីសាស្ត្រ ពហុអ្នកពាក់ព័ន្ធថ្មីមួយដែលរួមមានវិទ្យាស្ថានជាតិស្ថិតិ(NIS)និងក្រសួងអភិវឌ្ឍន៍ជនបទ(MRD)នៅ ថ្នាក់ជាតិ មន្ទីរអភិវឌ្ឍន៍ជនបទ(PDRD)និងមន្ទីរផែនការ(PDP)នៅថ្នាក់ខេត្ត ការិយាល័យអភិវឌ្ឍន៍ជនបទ(DRDO)និង ការិយាល័យផែនការ(DPOs)នៅថ្នាក់ស្រុក ក៏ដូចជានិស្សិតនិងបុគ្គលិកអង្គការ WaterAidនៅថ្នាក់កណ្តាល និងថ្នាក់ខេត្ត។

វិធីសាស្ត្រពហុអ្នកពាក់ព័ន្ធនេះគឺជាការអនុវត្តដ៏ល្អបំផុតនៃដំណើរការនេះ។ ពត៌មានលម្អិត អំពីតួនាទី អ្នកពាក់ព័ន្ធនីមួយៗអាចរកបាននៅក្នុងតារាងខាងក្រោមនេះ។

កម្រងសំណួរគឺផ្អែកទៅលើការអង្កេតសេដ្ឋកិច្ចសង្គមកម្ពុជា ការអង្កេតសុខភាពប្រជាសាស្ត្រ កម្ពុជាក្នុង ឆ្នាំ២០១៤ ជំរឿនប្រជាជននៅឆ្នាំ២០០៨ ផ្នែកផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ(WATSAN)របស់ ជំរឿនប្រជាជននៅឆ្នាំ២០១៩ខាងមុខនេះ ក៏ដូចជាគោលដៅអភិវឌ្ឍន៍ប្រកប ដោយចីរភាពទី៦ដែលមាន គោលដៅទាក់ទងនិងការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ ហើយនិងការធ្វើបច្ចុប្បន្នភាពនៃកម្មវិធី ពិនិត្យតាមដានរួមគ្នានៃសូចនាករ។

តារាងទី ១៖ តួនាទីរបស់អ្នកពាក់ពន្ធ័

តារាង១៖ តួនាទីអ្នកពាក់ព័ន្ធ

អ្នកពាក់ព័ន្ធ	តួនាទី
NIS	• ដឹកនាំរៀបចំកម្រងបញ្ជីសំណួរសម្រាប់ការអង្កេត • បណ្តុះបណ្តាលមន្ត្រីសម្ភាសន៍និងមន្ត្រីត្រួតពិនិត្យការប្រមូលទិន្នន័យ • គ្រប់គ្រងការចុះមូលដ្ឋាននិងគ្រប់គ្រងគុណភាពជាមួយMRDនិងWaterAid • ដំណើរការទិន្នន័យនៅពេលប្រមូលទិន្នន័យ
MRD	• ចូលរួមសិក្ខាសាលាស្តីពីការរៀបចំកម្រងបញ្ជីសំណួរ • ជួយNIS លើការបណ្តុះបណ្តាលការប្រមូលទិន្នន័យ • គ្រប់គ្រងការចុះមូលដ្ឋាននិងត្រួតពិនិត្យគុណភាពជាមួយ NIS និង WaterAid
PDRD	• ចូលរួមសិក្ខាសាលាស្តីពីការរៀបចំកម្រងបញ្ជីសំណួរ • ជ្រើសរើសមន្ត្រីត្រួតពិនិត្យសម្រាប់ការប្រមូលទិន្នន័យ • សម្របសម្រួលនិងជួយដល់មន្ត្រីសម្ភាសន៍ក្នុងការប្រមូលទិន្នន័យ
PDP	• ចូលរួមសិក្ខាសាលាស្តីពីការរៀបចំកម្រងបញ្ជីសំណួរ • ជ្រើសរើសមន្ត្រីត្រួតពិនិត្យសម្រាប់ការប្រមូលទិន្នន័យ • សម្របសម្រួលនិងជួយដល់មន្ត្រីសម្ភាសន៍ក្នុងការប្រមូលទិន្នន័យ
DORDs	• ជ្រើសរើសជាមន្ត្រីសម្ភាសន៍សម្រាប់ការប្រមូលទិន្នន័យ៖ អនុវត្តន៍ការចុះសម្ភាសន៍ តាមគ្រួសារ

DOPs	• ជ្រើសរើសជាមន្ត្រីសម្ភាសន៍សម្រាប់ការប្រមូលទិន្នន័យ៖ អនុវត្តន៍ការចុះសម្ភាសន៍តាមគ្រួសារ
Students	• ជ្រើសរើសជាមន្ត្រីសម្ភាសន៍សម្រាប់ការប្រមូលទិន្នន័យ៖ អនុវត្តន៍ការចុះសម្ភាសន៍តាមគ្រួសារ
WaterAid	• គាំទ្រដល់ NIS ក្នុងការធ្វើកម្រងបញ្ជីសំណួរដោយផ្តល់ជាសំណួរគម្រូទាក់ទងនឹងការពិនិត្យតាមដានរួមគ្នា/គោលដៅអភិវឌ្ឍន៍ប្រកបដោយចីរភាព(JM/SDG) • រៀបចំនិងសម្របសម្រួលសិក្ខាសាលាពិគ្រោះយោបល់ជាមួយនឹងការផ្តល់ជូនបច្ចេកទេសពីNIS MRD PDRP និងPDP • ជ្រើសរើសមន្ត្រីសម្ភាសន៍និងមន្ត្រីត្រួតពិនិត្យការសម្ភាសន៍ចំនួន៥0នាក់ • គាំទ្រដល់ NIS លើការបណ្តុះបណ្តាលពីបច្ចេកទេសក្នុងការប្រមូលទិន្នន័យ • គ្រប់គ្រងការចុះមូលដ្ឋាននិងត្រួតពិនិត្យគុណភាពជាមួយMRDនិងNIS

គាំទ្រដល់អាជ្ញាធរថ្នាក់ក្រោមជាតិក្នុងការអនុវត្តការប្រមូលនិងពិនិត្យតាមដានទិន្នន័យការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ

គោលបំណងនៃរបាយការណ៍នេះ

លទ្ធផលសង្ខេបត្រូវបានបង្ហាញជារបាយការណ៍ដាច់ដោយឡែកពីគ្នា(របាយការណ៍ លទ្ធផល)។

របាយការណ៍នេះមានគោលបំណងបង្ហាញអំពីដំណើរការនិងមេរៀនបទពិសោធន៍ក្នុងអំឡុងពេលនៃដំណើរការចុះប្រមូលនិងវិភាគទិន្នន័យនៃការអង្កេតតាមគ្រួសាររួមទាំងការផ្តល់អនុសាសន៍អំពីរបៀបក្នុងការពិនិត្យតាមដានសេវាផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យជនបទនៅកម្ពុជាអាចនឹងមានភាពប្រសើរឡើង។

គោលបំណង

លើសពីការប្រមូលទិន្ន័យ ការអង្កេតសាកល្បងអំពីស្ថានភាពផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យជនបទមានគោលបំណងកសាងសមត្ថភាពអាជ្ញាធរនៅថ្នាក់ខេត្តនិងស្រុកក្នុងការប្រមូលនិងពិនិត្យតាមដានទិន្នន័យស្តីពីការគ្រប់គ្រងទឹកស្អាតនិងលើកកម្ពស់អនាម័យ ក៏ដូចជាការកសាងសកម្មភាពរួមគ្នានិងការចូលរួមរបស់អ្នកពាក់ព័ន្ធជុំវិញការពិនិត្យតាមដានទិន្នន័យរបស់ WASH ។

ដំណើរទិដ្ឋភាពទូទៅនិងការពិភាក្សា

ដំណើរការបានអនុម័តចំពោះការអង្កេតសាកល្បងអំពីស្ថានភាពផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យជាលើកដំបូងសម្រាប់ការអង្កេតប្រភេទនេះនៅក្នុងប្រទេស៖ NIS ដឹកនាំដំណើរការនេះជាមួយ MRD នៅថ្នាក់ជាតិ PDRD និង PDP នៅថ្នាក់ខេត្ត និងDORD និង DOPs នៅថ្នាក់ស្រុកជាមួយនឹងការជួយគាំទ្រពីអង្គការ WaterAid ក្នុងក្របខ័ណ្ឌការផ្តល់បច្ចេកទេស ការសម្របសម្រួលនិងការតាមដាន និងត្រួតពិនិត្យគុណភាព។ ប្រតិបត្តិការទាំងអស់បានសហការគ្នាក្នុងដំណាក់កាលនីមួយៗនៃដំណើរការនេះ ដូច្នេះបានបង្កើតជាប្រព័ន្ធរៀនសូត្រ គ្រប់គ្រង និងការគាំទ្រដោយការកំណត់នូវតួនាទីនិងការទទួល ខុសត្រូវច្បាស់លាស់។

ព័ត៌មានត្រឡប់លើជំហានខុសៗគ្នានៃដំណើរការ (ការបង្កើតកម្រងបញ្ជីសំណួរ កាបណ្តុះបណ្តាលមន្ត្រីសម្ភាសន៍ និងមន្ត្រីត្រួតពិនិត្យ ការប្រមូលទិន្នន័យ និងដំណើរការទិន្នន័យ) ក៏ដូចជាការដាក់បញ្ចូលការពិនិត្យតាមដានទិន្នន័យនាពេលអនាគតត្រូវបានរក្សាទុកតាមរយៈការធ្វើបទសម្ភាសន៍ជាមួយ NIS និងអង្គការ WaterAid ក៏ដូចជាព័ត៌មានត្រឡប់ពីសិក្ខាសាលាពិគ្រោះយោបល់ជាមួយ មន្ត្រីសម្ភាសន៍ និងអ្នកសម្របសម្រួលដែលបានប្រព្រឹត្តនៅខែតុលា ឆ្នាំ២០១៨ ក្នុងខេត្តកំពង់ឆ្នាំង ។

ការបង្កើតកម្រងបញ្ជីសំណួរ

ទិដ្ឋភាពទូទៅ

NISបានដឹកនាំក្នុងការធ្វើកម្រងបញ្ជីសំណួរអង្កេតដែលបានគាំទ្រដោយអង្គការ WaterAid ក្នុងការផ្តល់សំណួរដែលទាក់ទងនឹង JMP/SDG និងបានរៀបចំសម្របសម្រួលសិក្ខាសាលាពិគ្រោះយោបល់ចំនួន២លើកជាមួយនិងមន្ត្រីបច្ចេកទេសមកពី NIS MRD PDRD និងPDP។ កម្រងបញ្ជីសំណួរត្រូវបានផ្អែកទៅលើការអង្កេតសេដ្ឋកិច្ចសង្គមកម្ពុជា ការអង្កេតសុខភាពប្រជាសាស្ត្រកម្ពុជាក្នុងឆ្នាំ២០១៤ ជំរឿនប្រជាជននៅឆ្នាំ២០០៨ ផ្អែកផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ(WATSAN) របស់ ជំរឿនប្រជាជននៅឆ្នាំ២០១៩ខាងមុខនេះ ក៏ដូចជាគោលដៅអភិវឌ្ឍន៍ប្រកប ដោយចីរភាពទី៦ដែលមានគោលដៅទាក់ទងនិងការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ ហើយនិងការធ្វើបច្ចុប្បន្នភាពនៃកម្មវិធីពិនិត្យតាមដានរួមគ្នានៃសូចនាករ។

ជោគជ័យ

ដោយគិតថាសូចនាករការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យថ្នាក់ជាតិអាចបន្តទៅបានអាស្រ័យទៅលើសូចនាកររបស់MDG ក្រោយមកវាត្រូវបានប្រើសម្រាប់កម្រងបញ្ជីសំណួរទាំងអស់។ បច្ចុប្បន្នភាពសូចនាករគោលដៅអភិវឌ្ឍន៍ប្រកបដោយចីរភាពសម្រាប់ការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ/ជំហាននៃកម្មវិធីពិនិត្យតាមដានរួមគ្នាក៏ត្រូវបានដាក់បញ្ចូលទៅក្នុងកម្រងសំណួរផងដែរដើម្បីផ្តល់នូវ

ការពិនិត្យទូទៅដំបូងអំពីជំហាននៃកម្មវិធីពិនិត្យតាមដានរួមគ្នានូវកម្រិតសេវាទឹកស្អាតនិងលើកកម្ពស់អនាម័យនៅទូទាំងខេត្ត។ ហេតុដូច្នេះ កម្រងបញ្ជីសំណួរមិនត្រឹមតែផ្តល់ជាឧទាហរណ៍អំពីទិន្នន័យដែលតម្រូវតាមSDGsថ្មីប៉ុណ្ណោះទេ ប៉ុន្តែបានផ្តល់ឲ្យប្រតិបត្តិការសេវាផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ ជាមួយសំណួរឧទាហរណ៍ដើម្បីបញ្ចូលទៅក្នុងការប្រមូលទិន្នន័យក្នុងការចាប់ផ្តើមវាស់វែងសូចនាករ គោលដៅអភិវឌ្ឍន៍ប្រកបដោយចីរភាព[1]។

[1] គួរកត់សំគាល់ថា សម្រាប់គោលបំណងនៃការអង្កេតនេះ សំណាកគំរូនៃគុណភាពទឹកដែលតម្រូវឱ្យមានការវាយតម្លៃយ៉ាងពេញលេញលើទិដ្ឋភាពដែលគ្រប់គ្រងដោយសុវត្ថិភាពស្របតាមJMP មិនត្រូវបានអនុវត្តឡើយ ហើយជំនួសមកវិញគុណភាពទឹកគឺត្រូវបានកំណត់ដោយការយល់ឃើញរបស់អ្នកឆ្លើយតប។ ហេតុដូច្នេះ កម្រិតសេវាទឹកស្អាតត្រូវបានកំណត់ដោយការ "យល់ឃើញ" ។

មេរៀនបទពិសោធន៍

បើយោងតាមNISឧបសគ្គនៃការបង្កើតកម្រងបញ្ជីសំណួររួមមានការសម្របទៅនឹងឧបករណ៍ដែលមានស្រាប់ និងសំណួរអង្កេតចំពោះបរិបទក្នុងខេត្តកំពង់ឆ្នាំង រួមទាំងបញ្ហាសហគមន៍បណ្តែតទឹក និងតំបន់ដែលលិចទឹក។

លើសពីនេះទៀត បញ្ហាដែលបានកើតឡើងជាមួយសំណួរជាក់លាក់អំពីជំហានJMP ដែលនាំឲ្យ “ទិន្នន័យមិនគ្រប់គ្រាន់” មានកម្រិតខ្ពស់ បញ្ហានេះត្រូវតែកែតម្រូវកម្រងបញ្ជីសំណួរនៅពេលអនាគត។

- គ្រួសារដែលបានបន្សុតទឹករបស់ពួកគេត្រូវបានសួរអំពីការយល់ឃើញរថាតើទឹករបស់ពួកគេមានគុណភាពល្អឬមិនល្អ។ នាពេលអនាគតសំណួរនេះនឹងត្រូវសួរទៅកាន់ គ្រួសារទាំងអស់។
- សម្រាប់គ្រួសារដែលមិនអាចប្រើប្រាស់បង្គន់អនាម័យនៅក្នុងអំឡុងរដូវវស្សា សំណួរដែលត្រូវសួរបន្តគឺ តើពួកគេបន្ទោរបង់នៅទីណាក្នុងអំឡុងពេលនោះ។

ការបណ្តុះបណ្តាលមន្ត្រីសម្ភាសន៍ និងមន្ត្រីត្រួតពិនិត្យ

ទិដ្ឋភាពទូទៅ

រូបភាពទី១ - ក្រុមប្រមូលទិន្នន័យ

វគ្គបណ្តុះបណ្តាលរយៈពេល៣ថ្ងៃបានប្រព្រឹត្តទៅចាប់ពីថ្ងៃទី៩ ដល់ថ្ងៃទី១១ ខែឧសភា ដែលសម្របសម្រួលដោយវិទ្យាស្ថានជាតិស្ថិតិ (NIS) ដោយមានការជួយគាំទ្រពីអង្គការ WaterAid និងMRD ដើម្បីបណ្តុះបណ្តាលមន្ត្រីសម្ភាសន៍នៅថ្នាក់ស្រុក (ពី DORD និង DOPs ក៏ដូចជានិស្សិតមហាវិទ្យាល័យមួយចំនួនក្នុងតំបន់) និងមន្ត្រីត្រួតពិនិត្យ នៅថ្នាក់ខេត្ត(មកពី PDRP និងPDP) ដែលមានបទពិសោធន៍លើការប្រមូលទិន្នន័យ។ ជាសរុប មានមន្ត្រីសម្ភាសន៍និងមន្ត្រីត្រួតពិនិត្យចំនួន៥០នាក់ត្រូវបានជ្រើសរើស (ដោយអង្គការWaterAid) និងបានបណ្តុះបណ្តាលអស់រយៈពេល៣ថ្ងៃ។ នៅថ្ងៃដំបូងគឺបានផ្តល់អំពីសាវតាលើគោលបំណង នៃការធ្វើអង្កេតនិងបានបណ្តុះបណ្តាលពីការជ្រើសរើសគ្រួសារមកសម្ភាសន៍។

នៅថ្ងៃទី២ បានផ្តល់ការបណ្តុះបណ្តាលទៅលើផ្នែកស្នូលនៃកម្រងបញ្ជីសំណួរសម្ភាសន៍តាមគ្រួសារ ហើយអ្នកចូលរួមបានអនុវត្តន៍បទ សម្ភាសន៍គ្នាទៅវិញទៅមក។ នៅថ្ងៃទី៣ ត្រូវចុះអនុវត្តន៍កិច្ចសម្ភាសន៍នៅសហគមន៍ រួមមានការគូស ផែនទីភូមិនិងការជ្រើសរើសសំណាកគ្រួសារ។ រយៈពេល៣ថ្ងៃនៃវគ្គបណ្តុះបណ្តាលគឺមានការកែប្រែតិចតួចបំផុតត្រូវបានធ្វើឡើងដើម្បីបញ្ចប់កម្រងបញ្ជីសំណួរ។

ជោគជ័យ

ភាពជោគជ័យទូទៅនៃវគ្គបណ្តុះបណ្តាលរួមមាន គុណភាពនៃភាពជាអ្នកដឹកនាំពី NIS ការសហការយ៉ាងសកម្មពីអ្នកដែលពាក់ព័ន្ធ(NIS MRD អង្គការ WaterAid និងអ្នកចូលរួម) ហើយនិង ការកើនឡើងនូវ "ចំណេះដឹងនិងសមត្ថភាពរបស់អ្នកចូលរួម និងក្នុងការប្រមូលទិន្នន័យ"។

មេរៀនបទពិសោធន៍

អ្នកចូលរួមបានរាយការណ៍អំពីផលលំបាកដែលបានប្រឈមក្នុងការយល់ដឹងនិងការរៀបចំដោយស្វ័យភាពក្នុងការជ្រើសរើសគ្រួសារដោយចៃដន្យ ពោលគឺនៅពេលដែលអ្នកឆ្លើយតបត្រូវបានជ្រើសរើសតាំងពីដំបូង បានអវត្តមាននៅថ្ងៃប្រមូលទិន្នន័យ។ ជាលទ្ធផលគឺបណ្តាលឲ្យមានការយល់ច្រលំ ថាតើគ្រួសារឆ្លើយសំនួរណាដែលពួកគេគួរជ្រើសរើសដើម្បីកុំអោយទិន្នន័យមានការលំអៀង។

អ្នកចូលរួមក៏បានជួបផលលំបាកដែលពួកគេបានប្រឈមក្នុងការយល់ដឹងអំពីពាក្យបច្ចេក ទេសមួយចំនួន ពោលគឺនៅពេលដែលបកប្រែពីភាសាខ្មែរទៅជាភាសាអង់គ្លេស។ ចំពោះបញ្ហានេះ ពាក្យបច្ចេកទេសទាំងនោះរួមមាន "បង្គន់អនាម័យ" "កន្លែងលាងសម្អាតដៃ"ឬ "ការធ្វើប្រព្រឹត្តិកម្មទឹក" មិនត្រូវបានកំណត់ឲ្យបានច្បាស់លាស់ដោយប្រតិបត្តិករទាំងអស់ដែលនាំឲ្យមានការយល់ច្រលំ និង បង្កើតជាកំហុសអំឡុងពេលប្រមូលទិន្នន័យ។ ជាក់ស្តែង មន្ត្រីប្រមូលទិន្នន័យមួយចំនួនបានគិតថាគ្រួសារដែលមានកន្លែងលាងសម្អាតដៃដរាបណាពួកគាត់មានកន្លែងលាងសម្អាតដៃត្រឹមត្រូវ (ឡាបូ) ខណៈដែលអ្នកដទៃគិតថាប្រភេទកន្លែងលាងសម្អាតដៃមានដូចជាធ្លិលឬធុង។ ជាលទ្ធផលបណ្តាលឲ្យចំនួននៃកន្លែងលាងសម្អាតដៃនៅក្នុងការអង្កេតមានតួលេខទាបជាងការពិត នេះបើយោងតាមនិយមន័យរបស់គោលដៅអភិវឌ្ឍន៍ប្រកបដោយចីរភាពនិងMRD។

បន្ថែមពីនេះទៀត អ្នកចូលរួមវគ្គបណ្តុះបណ្តាលមិនត្រូវបានឲ្យចុះហត្ថលេខាលើកិច្ចព្រម ព្រៀងចំពោះឆន្ទៈក្នុងការអនុវត្តសកម្មភាពប្រមូលទិន្នន័យបន្ទាប់ពីបានចូលរួមវគ្គបណ្តុះបណ្តាល ជាលទ្ធផលគឺនាំឲ្យមានការបោះបង់ដោយមិនបានរំពឹងទុករវាងវគ្គបណ្តុះបណ្តាលនិងការប្រមូលទិន្នន័យ។ ពោលគឺមានបញ្ហាមួយបានកើតឡើងនៅក្នុងស្រុកបរិបូរណ៍ដែលមន្ត្រីប្រមូលទិន្នន័យ ចំនួន៦នាក់ត្រូវបានបណ្តុះបណ្តាល ប៉ុន្តែមានតែ៤នាក់ប៉ុណ្ណោះដែលបានអនុវត្តការប្រមូលទិន្នន័យ ហើយបង្កឲ្យមានកង្វះធនធានមនុស្សនិងពន្យាពេលក្នុងការប្រមូលទិន្នន័យ ក៏ដូចជាធ្វើឲ្យមានសំពាធដល់សមាជិកក្រុមផងដែរ។

ជាទីបញ្ចប់ នៅថ្ងៃទី៣នៃការបណ្តុះបណ្តាលក្នុងការចុះទៅមូលដ្ឋានដែលបានប្រព្រឹត្ត នៅស្រុកដែលនៅជិតទីក្រុង។ អ្នកចូលរួមមិនបានគិតអំពីបញ្ហាដែលពួកគេអាចនឹងប្រឈមចំពោះការប្រមូលទិន្នន័យនៅតំបន់ជនបទដាច់ស្រយាល។

ជារួម អ្នកចូលរួមបានរាយការណ៍ថាគុណភាពនៃការបណ្តុះបណ្តាលគឺល្អ ប៉ុន្តែមិនបានផ្តល់ ពេលវេលាគ្រប់គ្រាន់ដល់ពួកគេក្នុងការយល់ដឹងនិងចាប់បានអំពីដំណើរការប្រមូលទិន្នន័យទេ។ ពួកគេចង់ឲ្យមានការបណ្តុះបណ្តាលដែលមានរយៈពេលយូរជាងនេះ គឺ ចំនួន៤ថ្ងៃ។

ដំណើរការប្រមូលទិន្នន័យ

ទិដ្ឋភាពទូទៅ

ការប្រមូលទិន្នន័យប្រព្រឹត្តទៅចាប់ពីថ្ងៃទី១៥ ដល់ថ្ងៃទី៣១ ខែឧសភានៅទូទាំងស្រុកទាំងអស់។ មន្ត្រីសម្ភាសន៍និងមន្ត្រីត្រួតពិនិត្យ បានរៀបចំការប្រមូលទិន្នន័យ។ មន្ត្រីបច្ចេកទេស NIS បានចុះទៅដល់ភូមិដែលជាកន្លែងក្រុមការងារអង្កេតបានធ្វើបទសម្ភាសន៍ដោយបានត្រួតពិនិត្យគុណភាពនិងផ្តល់ព័ត៌មានត្រឡប់។ ការិយាល័យខេត្តនិងការិយាល័យកណ្តាលរបស់អង្គការ WaterAid ក៏បានផ្តល់ប្រតិបត្តិការពិនិត្យលើការអង្កេតនិងគាំទ្រភស្តុភាផងដែរ។

រូបភាព ២៖ ការទៅដល់ភូមិបណ្តែតទឹកដោយការធ្វើដំណើរដោយទូក

ភាពជោគជ័យ

កិច្ចសហប្រតិបត្តិការរវាងមន្ត្រីត្រួតពិនិត្យចុះមូលដ្ឋាននិងមន្ត្រីសម្ភាសន៍ បានបង្ហាញពីភាពជោគជ័យយ៉ាងខ្លាំង។ នៅសប្តាហ៍ទី១នៃការ ប្រមូលទិន្នន័យ ក្រុមការងារបានបង្កើនសមត្ថភាពរបស់ពួកគេបានយ៉ាងល្អចំពោះគុណភាពនៃការសម្ភាសន៍ និងពេលវេលានិងការគ្រប់គ្រងធនធាន។

ក្រុមការងារដែលបានជ្រើសរើសទាំងនោះ គឺជាប្រជាជនដែលរស់នៅក្នុងស្រុកនិងជាកន្លែងដែលត្រូវប្រមូលទិន្នន័យ ដូច្នេះការស្គាល់ជាមួយគ្រួសារដែលឆ្លើយសំណួរគឺបង្កើតភាពងាយស្រួលដល់មន្ត្រីប្រមូលទិន្នន័យនិងមានភាពទុកចិត្តពីអ្នកឆ្លើយសំនួរ។

បើទោះបីជាមានរយៈពេលតែ៤ថ្ងៃរវាងការបញ្ចប់វគ្គបណ្តុះបណ្តាលនិងការចាប់ផ្តើមដំណើរការប្រមូលទិន្នន័យ ក៏ប៉ុន្តែកិច្ចសហប្រតិបត្តិការដ៏រឹងមាំជាមួយPDPដែលបានរៀបចំកិច្ច ; សម្ភាសន៍ប្រព្រឹត្តទៅបានដោយសារតែទំនាក់ទំនងរបស់ពួកគេនៅក្នុងភូមិ។

មេរៀនបទពិសោធន៍

ខណៈដែលភូមិត្រូវបានប្រមូលទិន្នន័យគឺមានភូមិសាស្ត្រឆ្ងាយគ្នា មធ្យោបាយធ្វើដំណើរពី ភូមិមួយទៅភូមិមួយគឺមានចំងាយឆ្ងាយនិងជួនកាលពិបាកផងដែរ។ នៅពេលដែលការប្រមូល ទិន្នន័យបានប្រព្រឹត្តទៅក្នុងអំឡុងពេលដើមរដូវវស្សា ក្រុមការងារបានជួបភាពលំបាកក្នុងការចូល ទៅដល់ភូមិ ពោលគឺនៅតំបន់ដាច់ស្រយាលនិងភូមិបណ្តែតទឹកដែលត្រូវចំណាយពេលជាច្រើន ដើម្បីទៅដល់ ហើយការធ្វើដំណើរដោយម៉ូតូគឺមិនអាចធ្វើទៅបានឡើយ។ ជាលទ្ធផលបង្កឲ្យខាតពេលវេលានិងកម្លាំងជាច្រើនចំពោះក្រុមការងារនៅក្នុងតំបន់ទាំងនេះ ដូចជាកំពង់លែង(ភូមិបណ្តែត ទឹក) និងជលគីរី(ដែលស្ថិតនៅតាមដងទន្លេពីក្រុងកំពង់ឆ្នាំង)។ ក្រុមការងារត្រូវបានផ្តល់ពេល១ថ្ងៃ ក្នុង១ភូមិដើម្បីធ្វើកិច្ចសម្ភាសន៍តាមគ្រួសារ នេះបង្ហាញថាមានរយៈពេលខ្លីសម្រាប់ភូមិដែលមានទំហំធំ ដោយពួកគេចាំបាច់ត្រូវស្នាក់នៅទីនោះមួយយប់។

;

ក្រុមការងារមួយចំនួនបានរាយការណ៍ថាបានជួបការលំបាកជាមួយនឹងអាជ្ញាធរមូលដ្ឋានដោយមិនមានពេលក្នុងការសហការជាមួយពួកគេទាក់ទងនឹងការប្រមូលទិន្នន័យឬការរំពឹងទុកដែលថាពួកគាត់នឹងចូលរួម។ បន្ថែមពីនេះទៀត បើទោះបីជាអ្នកឆ្លើយសំនួរបានបង្ហាញពីការទុកចិត្ត ទៅកាន់ មន្ត្រីប្រមូលទិន្នន័យដែលពួកគេស្គាល់ ប៉ុន្តែគ្រួសារខ្លះគឺមិនបានឲ្យចូលទៅក្នុងផ្ទះរបស់ពួកគេទេ ឬក៏មិនបាននៅផ្ទះក្នុងអំឡុងពេលសម្ភាសន៍ដែលនាំឲ្យខាតពេលវេលានិងធនធាន។ អ្នកភូមិមួយចំនួនមានការស្ទាក់ស្ទើរក្នុងការឆ្លើយសំនួរនៅពេលដែលពួកគេមិនបានយល់ពីគោលបំណងនៃការអង្កេតនេះច្បាស់ឬពួកគេមានការសង្ស័យពីការឆបោកដោយអះអាងថាវាគឺជារឿងធម្មតារបស់អ្នក ក្លែងបន្លំសំដៅពីផ្ទះមួយទៅផ្ទះមួយ។

ដំណើរការទិន្នន័យ

ដំណើរការនិងកែសម្រួលទិន្នន័យត្រូវបានអនុវត្តដោយ NIS ចាប់ពីថ្ងៃទី១១ ដល់ថ្ងៃទី២២ ខែមិថុនាឆ្នាំ២០១៨។ សំនួរមួយចំនួន(ពោលគឺសំនួរទី២៣ តើអ្នកគិតថាគ្រួសារអ្នកឈឺដោយសារការបរិភោគទឹកមិនស្អាត? និងសំនួរទី៤ តើជាប្រភេទជម្ងឺអ្វីខ្លះ?) ដែលតម្រូវឲ្យជាចម្លើយដែលមានលក្ខណៈគុណភាព បន្ទាប់មកកំណត់កូដបញ្ចូលទៅក្នុងប្រភេទនីមួយៗ។ ក៏ប៉ុន្តែខ្លឹមសារនៃសំនួរមានន័យទូលំទូលាយពេកដែលបណ្តាលឲ្យមានបញ្ហាក្នុងអំឡុងពេលកំណត់កូដបញ្ចូលទៅក្នុងប្រភេទនីមួយៗ។ ដូច្នេះដើម្បីធ្វើឲ្យល្អគេត្រូវសរសេរកូដប្រភេទជម្ងឺជាមុន។


រូបភាព៣៖ អ្នកជំរឿននិងអ្នកឆ្លើយសំណួរក្នុងអំឡុងពេលប្រមូលទិន្នន័យ

បន្ថែមពីនេះទៀត ការគណនាសូចនាករគោលដៅអភិវឌ្ឍន៍ប្រកបដោយចីរភាព និងការ បង្កើតតារាង JMP ពីទិន្នន័យដែលបានប្រមូលបានបង្ហាញពីការងារដ៏ស្មុគស្មាញព្រោះនេះជាលើកដំបូងក្នុងការអនុវត្ត។ ដូចនេះមានការសាកល្បងនិងកំហុសមួយចំនួនក្នុងការបង្កើតតារាងទាំងនេះឲ្យបានត្រឹមត្រូវ។ មេរៀនបទពិសោធន៍ទទួលបានអាចដាក់បញ្ចូលទៅក្នុងកម្រងសំនួរនាពេលអនាគតដើម្បីវាស់វែងសូចនាករគោលដៅអភិវឌ្ឍន៍ប្រកបដោយចីរភាព។

ការឆ្ពោះទៅមុខ៖ ការពិនិត្យតាមដានទិន្នន័យថ្នាក់ជាតិនិងថ្នាក់ក្រោមជាតិ

ការអនុវត្តការពិនិត្យតាមដានទិន្នន័យ

អំឡុងពេលធ្វើសិក្ខាសាលាផ្តល់យោបល់ មន្ត្រីសម្ភាសន៍និងមន្ត្រីត្រួតពិនិត្យដែលទទួលខុសត្រូវ លើការប្រមូលទិន្នន័យបានរាយការណ៍ថាវា ចាំបាច់ណាស់ក្នុងការបន្តពិនិត្យតាមដាន ទិន្នន័យដែលប្រមូលបានជាប្រចាំ។ ដើម្បីធ្វើ បែបនេះ ពួកគេស្នើរសុំឲ្យបន្ថែមសំនួរពីការអង្កេតសាកល្បងទិន្នន័យទឹកស្អាតនិងលើកកម្ពស់អនាម័យទៅក្នុងទិន្នន័យមូលដ្ឋានរបស់ ឃុំជាសំនួរបន្ថែមដើម្បីពិនិត្យតាមដានដោយមានកិច្ច

សម្របសម្រួលជាមួយនាយដ្ឋានផែនការ ។ ដូចនេះ គឺសំខាន់ណាស់សម្រាប់មន្ត្រីប្រមូលទិន្នន័យខេត្តនិង ស្រុកក្នុងការបណ្តុះបណ្តាល មន្ត្រីឃុំដើម្បីអនុវត្តការប្រមូលទិន្នន័យនិងពិនិត្យតាមដាននៅកម្រិតថ្នាក់ឃុំ។នេះ តម្រូវឲ្យមាន កិច្ចសហប្រតិបត្តិការណ៍យ៉ាងសកម្មជាមួយនឹងមេភូមិនិងកំនត់នូវតួនាទីច្បាស់លាស់ទាក់ទងនឹង បុគ្គលដែល ទទួលខុសត្រូវលើការបង្កើតរបាយការណ៍រីកចម្រើនលើការទទួលបានសេវាផ្គត់ផ្គង់ទឹកស្អាតនិង លើកកម្ពស់ អនាម័យ។

សំណើរមួយទៀតគឺស្នើរឲ្យមានការដាក់បញ្ចូលសំនួរអង្កេតទៅក្នុងការអង្កេតPDRDថ្នាក់ខេត្ត។

បង្កើនសមត្ថភាពបុគ្គលិកថ្នាក់ក្រោមជាតិក្នុងការប្រមូលនិងពិនិត្យតាមដានទិន្នន័យទូទាំងខេត្ត

សំណើរសំខាន់ជុំវិញការបណ្តុះបណ្តាលដៃគូថ្នាក់ក្រោមជាតិក្នុងការប្រមូលនិងពិនិត្យតាមដានទិន្នន័យ ការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ គឺដើម្បីរៀបចំសិក្ខាសាលាចែករំលែកចំណេះដឹង ទូទាំងខេត្តដែល មន្ត្រីប្រមូលទិន្នន័យនឹងចែករំលែកបទពិសោធន៍ និងមេរៀនទទួលបានក្នុង ក្របខ័ណ្ឌបច្ចេកទេសប្រមូល ទិន្នន័យ វិធីសាស្ត្រនិងពេលវេលានិងការគ្រប់គ្រងធនធាន។

ជារួមដំណើរការប្រមូលទិន្នន័យបានបង្ហាញពីផ្លែផ្កានៃកិច្ចសហប្រតិបត្តិការណ៍ពីប្រតិបត្តិករ ទាំងអស់ និងគុណភាពខ្ពស់ក្នុងការសម្ភាសន៍តាមគ្រួសារ។ ដូចនេះដំណើរការអាចឲ្យខេត្តផ្សេងទៀត យកទៅអនុវត្តតាម ជាមួយគោលបំណងប្រមូលទិន្នន័យថ្នាក់ខេត្តនៅទូទាំងប្រទេស។

អនុសាសន៍

យោងតាមដំណើរការនិងមេរៀនបទពិសោធន៍ ខាងក្រោមនេះជាអនុសាសន៍ក្នុងការធ្វើឲ្យប្រសើរឡើង នូវដំណើរការប្រមូលទិន្នន័យសម្រាប់ពេលអនាគតចំពោះខេត្តផ្សេងទៀត និងដើម្បីផ្សាភ្ជាប់ជាមួយអ្នកពាក់ព័ន្ធ ក្នុងការពិនិត្យតាមដានទិន្នន័យការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យនៅកម្រិតថ្នាក់ជាតិនិងថ្នាក់ក្រោម ជាតិ។

១.១ ការធ្វើឲ្យប្រសើរឡើងនូវដំណើរការប្រមូលទិន្នន័យសម្រាប់ពេលអនាគត

១.១.ក. **ធានាឲ្យមានការយល់ស្របអត្ថន័យនិងយល់អំពីដំណើរការនិងពាក្យបច្ចេកទេស។** ដំណើរការបច្ចេកទេសរួមមានការជ្រើសរើសគ្រួសារដោយចៃដន្យនិងពាក្យ បច្ចេកទេសដូចជា "ទីកន្លែងលាងសម្អាតដៃ" ត្រូវកំណត់អត្ថន័យនិងយល់ដឹងដូចគ្នាចំពោះ មន្ត្រីបណ្តុះបណ្តាល និង មន្ត្រីប្រមូលទិន្នន័យដើម្បីជៀសវាងការយល់ច្រលំនិងមានទិន្នន័យ លំអៀង។

១.១.ខ. **កាត់បន្ថយអត្រាបោះបង់ចោល** រវាងការបណ្តុះបណ្តាលនិងការប្រមូលទិន្នន័យ ត្រូវធានាថា អ្នកចូលរួមបណ្តុះបណ្តាលយល់ព្រមនិងមានឆន្ទៈចូលរួមអនុវត្តប្រមូលទិន្នន័យ ក្រោយពេល ទទួលបានវគ្គបណ្តុះបណ្តាល។

១.១.គ. **ធានាក្នុងការធ្វើកិច្ចសហប្រតិបត្តិការណ៍សកម្មជាមួយមេភូមិ** សម្រាប់ការរៀបចំការប្រមូល ទិន្នន័យដែលនាំអោយដំណើរការមានភាពរលូន។

១.១.ឃ. **អនុវត្តន៍ការប្រមូលទិន្នន័យក្នុងអំឡុងពេលរដូវប្រាំង** បន្ទាប់ពីប្រមូលផលរួចប្រហែលជានៅក្នុងខែកុម្ភៈ។ នេះនឹងជួយកាត់បន្ថយការលំបាកដែលក្រុមការងារបានជួបប្រទះក្នុង ការចូលទៅកាន់ភូមិដាច់ស្រយាល/លិចទឹកព្រោះដោយសារភ្លៀងធ្លាក់ខ្លាំង ដូច្នេះនាំឲ្យប៉ះពាល់ដល់គុណភាពនៃការប្រមូលទិន្នន័យ(គ្រួសារដែលមិនអាចទៅដល់ឬគ្រួសារដែលអវត្តមានពីព្រោះពួកគេបានផ្លាស់ទីលំនៅទៅកន្លែងដែលមានសុវត្ថិភាពសម្រាប់រដូវនេះ) និងក្រមសីលធម៌របស់ក្រុមការងារ។ ក្រោយប្រមូលផល ចំនួនមនុស្សដែលបានចូលរួមនៅក្នុងការសម្ភាសន៍គ្រួសារនឹងមានការកើនឡើងផងដែរ ដែលអាចឲ្យអ្នកឆ្លើយសំនួរបានកាន់តែច្រើនក្នុងការឆ្លើយសំនួរសម្ភាសន៍។

១.១.ង. **បង្កើនគុណភាពការអង្កេតតាមគ្រួសារ** ដោយធ្វើបទសម្ភាសន៍ជាមួយនិងអ្នកឆ្លើយសំនួរនៅផ្ទះរបស់ពួកគេ គឺមិនមែនធ្វើនៅកន្លែងធ្វើការរបស់ពួកគេទេ(ផ្សារ ឬស្រែ)ដូចនេះធ្វើឲ្យអ្នកឆ្លើយអាចឆ្លើយសំនួរទាំងអស់បានពេញលេញនិងគ្រប់គ្រាន់។

១.១.ច. **បង្កើតកញ្ចប់ទំនាក់ទំនង** ដើម្បីធានាការប្រមូលទិន្នន័យ ក្រុមការងារអាច **បញ្ចុះបញ្ចូល អ្នកដែលឆ្លើយស្នាក់ស្នើរអំពីសារៈសំខាន់និងភាពទុកចិត្តដល់បទសម្ភាសន៍គ្រួសារ។** កញ្ចប់នេះធ្វើឡើងដោយមានឯកសារងាយស្រួលអាន ឬវីឌីអូខ្លីដែលសង្ខេបអំពីសារៈប្រយោជន៍ និងសារៈសំខាន់នៃការប្រមូលទិន្នន័យ ឬដំណើរការពិនិត្យតាមដាន។

១.២. ការឆ្ពោះទៅមុខៈការប្រមូលនិងពិនិត្យតាមដានទិន្នន័យការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យនៅថ្នាក់ក្រោមជាតិ

១.២.ក. **ពិនិត្យតាមដានប្រកបដោយចីរភាព** អំពីទិន្នន័យការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ របស់អជ្ញាធរថ្នាក់ខេត្តនិងថ្នាក់ស្រុក គួរតែ**បណ្តុះបណ្តាលអជ្ញាធរថ្នាក់ឃុំដើម្បីពិនិត្យតាម ដានសូចនាករការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ**ថ្នាក់ឃុំឲ្យបានជាប្រចាំ។

១.២.ខ. **ផ្សព្វផ្សាយលទ្ធផលនៃដំណើរការអង្កេតសាកល្បងការផ្គង់ផ្គត់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ** ជំរុញឲ្យអ្នកពាក់ព័ន្ធវិស័យទឹកស្អាតនិងលើកកម្ពស់អនាម័យអនុវត្តន៍ការប្រមូលទិន្នន័យដូចគ្នាទូទាំងខេត្តផ្សេងទៀតក្នុងប្រទេសក្នុងគោលបំណងដើម្បីបង្កើតទិន្នន័យការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យនៅទូទាំងប្រទេសដោយបែងចែកជាខេត្ត ស្រុក និងឃុំ។ ដូច្នេះ នៅ**ក្នុងសិក្ខាសាលាចែករំលែកចំណេះដឹង**រវាងក្រុមការងារប្រមូលទិន្នន័យមកពីខេត្តកំពង់ឆ្នាំងនិងក្រុមការងារប្រមូលទិន្នន័យនៅតាមបណ្តាខេត្តផ្សេងគួតែរៀបចំឡើងដើម្បីចែករំលែកជំនាញនិងមេរៀនបទពិសោធន៍។

១.២.គ. បន្ត**ការស្វែងរកមតិគាំទ្រដើម្បីឲ្យមានស្តង់ដារជាតិសូចនាករសម្រាប់ការផ្គត់ផ្គង់ ទឹកស្អាតនិងលើកកម្ពស់អនាម័យ។** កាលពីមុនមិនមានស្តង់ដារសូចនាករដែលបានប្រើប្រាស់ដោយ NIS និង MRD នោះទេ។ ការឆ្ពោះទៅមុខ អរគុណសម្រាប់ការស្វែងរកមតិគាំទ្ររួមគ្នារវាង

អង្គការ UNICEF និងអង្គការ WaterAid ស្តង់ដារសូចនាករលើកកម្ពស់អនាម័យ នឹងត្រូវដាក់បញ្ចូលនៅក្នុងជំរឿនប្រជាជនឆ្នាំ២០១៩។ ដើម្បីសម្រេចបាននូវស្តង់ដារសូចនាករសម្រាប់ការផ្គត់ផ្គង់ទឹកស្អាតនិងលើកកម្ពស់អនាម័យនឹងអាចឲ្យការប្រមូលនិងពិនិត្យតាមដានទិន្នន័យស្របគ្នាទាំងកម្រិតថ្នាក់ជាតិនិងថ្នាក់ក្រោមជាតិរួមទាំងទិន្នន័យមូលដ្ឋានឃុំដែលជាកន្លែងអនុវត្តពិនិត្យតាមដាននៅកម្រិតមូលដ្ឋាន។

១.២.ឃ. ជំរុញMRDនិងអ្នកពាក់ពន្ធ័ផ្សេងទៀតបង្កើត**និយមន័យច្បាស់លាស់អំពីពាក្យ "កែលម្អ" និង "មិនកែលម្អ"** និងគូសចំណាំភាពខុសគ្នារវាងនិយមន័យRGCនិង និយមន័យJMP។

១.២.ង. **សាកល្បងបញ្ចូលការធ្វើតេស្តគុណភាពទឹក**ទៅក្នុងការអង្កេតគ្រួសារដែលដឹកនាំ ដោយស្ថាប័នរដ្ឋាភិបាលក្នុងការប្រមូលលទ្ធផលលើគុណភាពទឹកស្របតាមគោលដៅអភិវឌ្ឍន៍ប្រកបដោយចីរភាព។

Going Further: Safely Managed (Perceived) Water Services (JMP Ladders)

Under the new SDG framework, data will be monitored under the following categories: safely managed, basic, limited, unimproved, and surface water (see Table 1 for definitions). The results for Kampong Chhnang Province and its districts are detailed hereunder.

Table 1- JMP Service Level Definitions for Water

Service Level	Definition
Safely Managed	Drinking water from an improved water source that is located on premises, available when needed and free from faecal and priority chemical contamination
Basic	Drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip, including queuing
Limited	Drinking water from an improved source for which collection time exceeds 30 minutes for a round trip, including queuing
Unimproved	Drinking water from an unprotected dug well or unprotected spring
Surface Waterv	Drinking water directly from a river, dam, lake, pond, stream, canal or irrigation canal

- **23.9%** persons have access to safely managed water in dry season and 24.8% in wet season.
- The overall percentages show a wide range between remote/rural districts and urban and more densely populated and developed districts (see District Level Charts).
- The highest levels of safely managed water services are in Krong Kampong Chhnang (urban), as well as in Kampong Tralach and Rolea B'ier, which have areas of higher density and development, including factories located alongside National Road 5.
- **21.2%** and **22.1%** of persons use a basic water service in the dry season and wet season, respectively. A majority of them use a tube well or borehole.
- 23.8% and **24.3% o**f people have unimproved access to water services during the dry and wet season, respectively. Almost all of them use unprotected wells.
- In Chol Kiri, only **0.8%** of persons use safely managed water services during the wet season and 0.4% during the dry season. 72.7% use surface water during the dry season (71.4% during the wet season).

Note: Four criteria must be measured to differentiate 'basic' and 'safely managed' water sources: (i) improved/unimproved source, (ii) water availability, (iii) access (time), and (iv) quality. WaterAid and the data collection teams did not have the time, capacity or resources to test the water quality during this survey; instead, respondents were asked to describe the quality of their water. As such, the safely managed category here is 'perceived'. Moreover, the high percentage of insufficient data is linked to the design of the survey: when respondents answered 'never treating water' in Q19, they then skipped the question about quality of water in Q22., and thus for these responses the results were unable to be categorized between basic or safely managed.

WaterAid

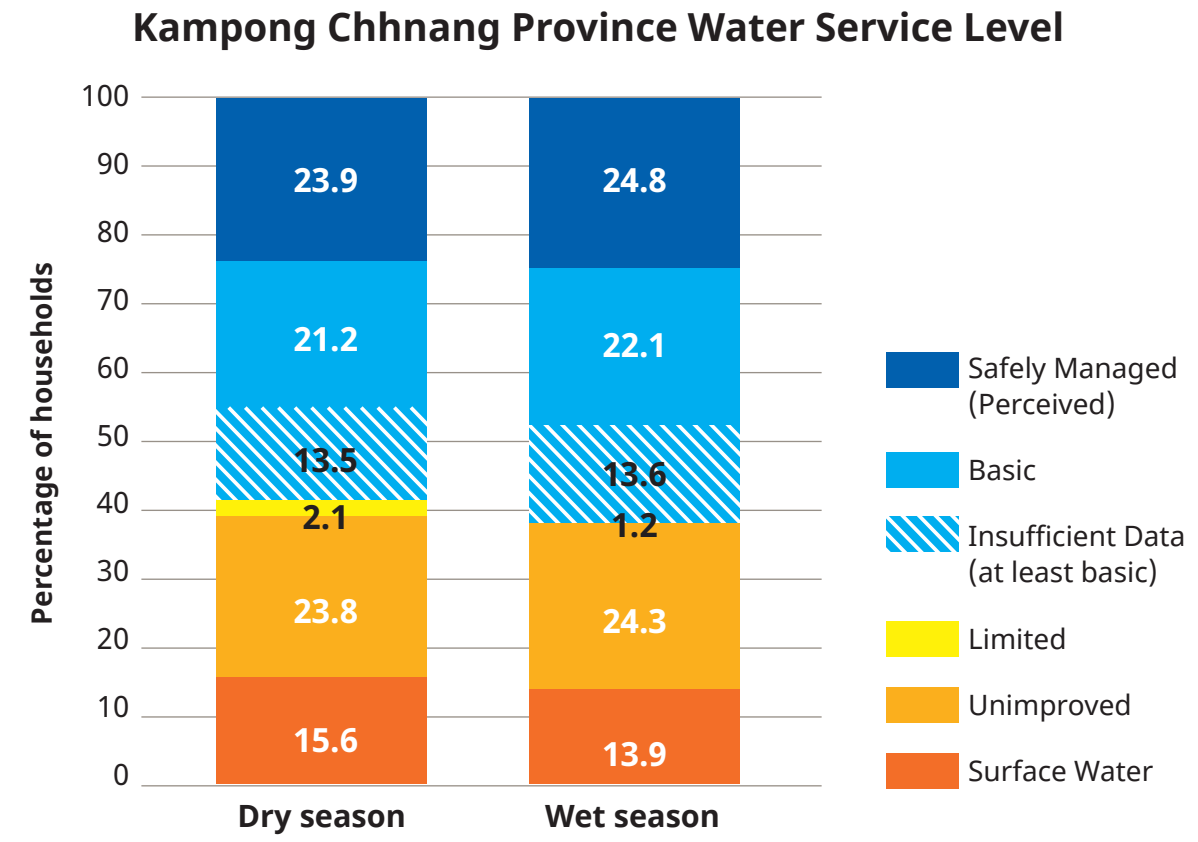


Chart 1- JMP Drinking Water Service Levels, Province

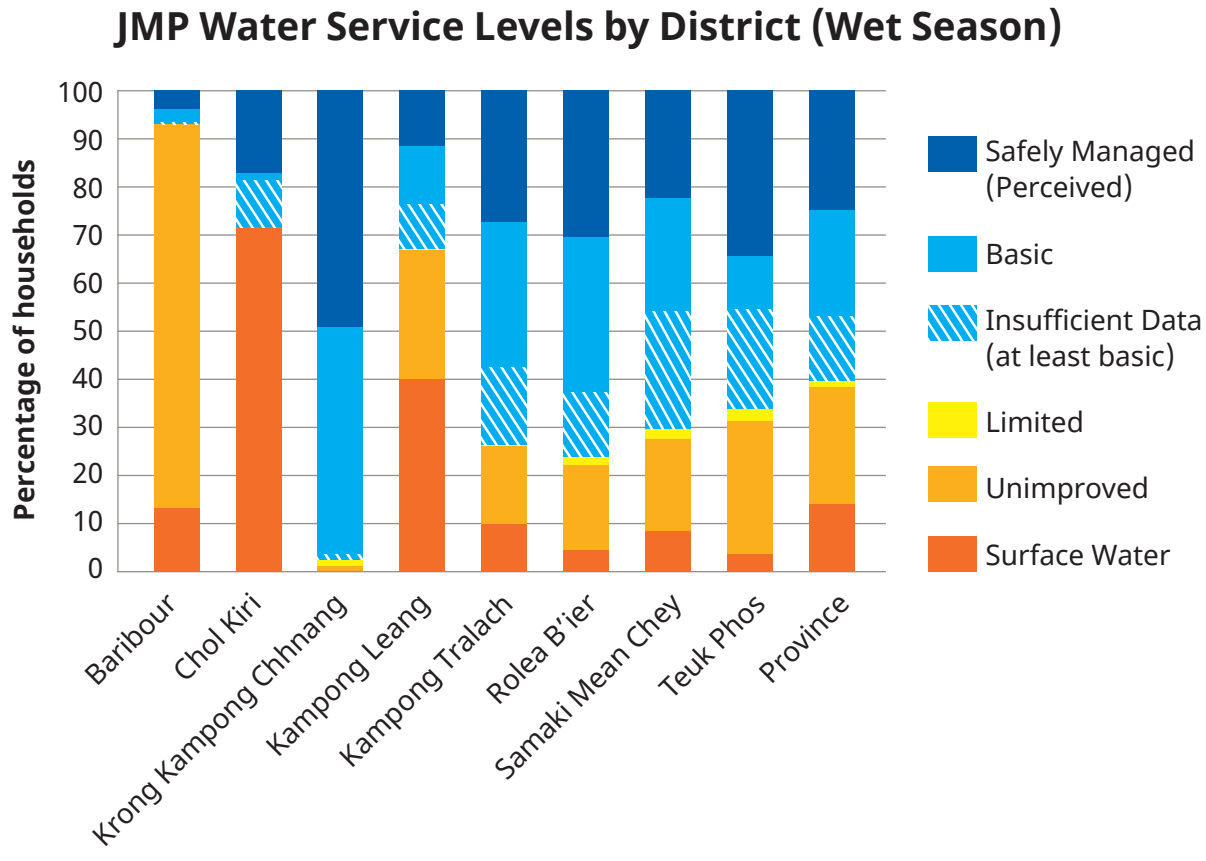


Chart 2- JMP Drinking Water Service Levels in Wet Season, district

Going Further: Safely Managed Sanitation (JMP Ladder)

Under the new SDG framework, data will be monitored under the following categories: safely managed, basic, limited, unimproved, and open defecation (see Table 1 for definitions). The results for Kampong Chhnang Province and its districts are detailed hereunder.

Table 1- JMP Service Level Definitions for Sanitation

Service Level	Definition
Safely Managed	Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite
Basic	Use of improved facilities that are not shared with other households
Limited	Use of improved facilities shared between two or more households
Unimproved	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
Open Defecation	Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open spaces, or with solid waste

- **45.6%** of persons use safely managed sanitation services during the dry season, with a slight decrease to **43.1%** during the wet season. The overall range shows a disparity between high service levels in urban (Krong Kampong Chhnang) and more densly populated areas in close proximity to national roads and factories (Kampong Tralach and Rolea B'ier) and lower service levels in rural and more remote districts (see district level charts below).
- Chol Kiri and Teuk Phos have the lowest levels of safely managed sanitation services: **28.7%** in dry season / **26.3%** in wet season for Chol Kiri, and **29.2%** in dry season / **26.5%** in wet season for Teuk Phos.
- There is a **34.8%** open defecation rate province-wide in the dry season.
- Open defecation rates are the highest in Chol Kiri: **62.4%** in dry season, and **11.6%** in wet season. However, the decreases during wet season are directly linked to the increase in insufficient data available. The high percentage of insufficient data during wet season concerns respondents who cannot use their latrine during the wet season, but who did not identify what type of sanitation they use instead. It is expected most of the households categorized under 'insufficient data' are seasonally open defecating in the wet season. The likely open defecation rate during the wet season therefore increases to **39.7%** province-wide, with a maximum of **66.2%** in Chol Kiri.
- In Kampong Leaeng – where many floating villages are located- the open defecation rate is **47.4%** in the dry season; and increases to **58.3%** (likely) in the wet season, due to latrine flooding.

WaterAid

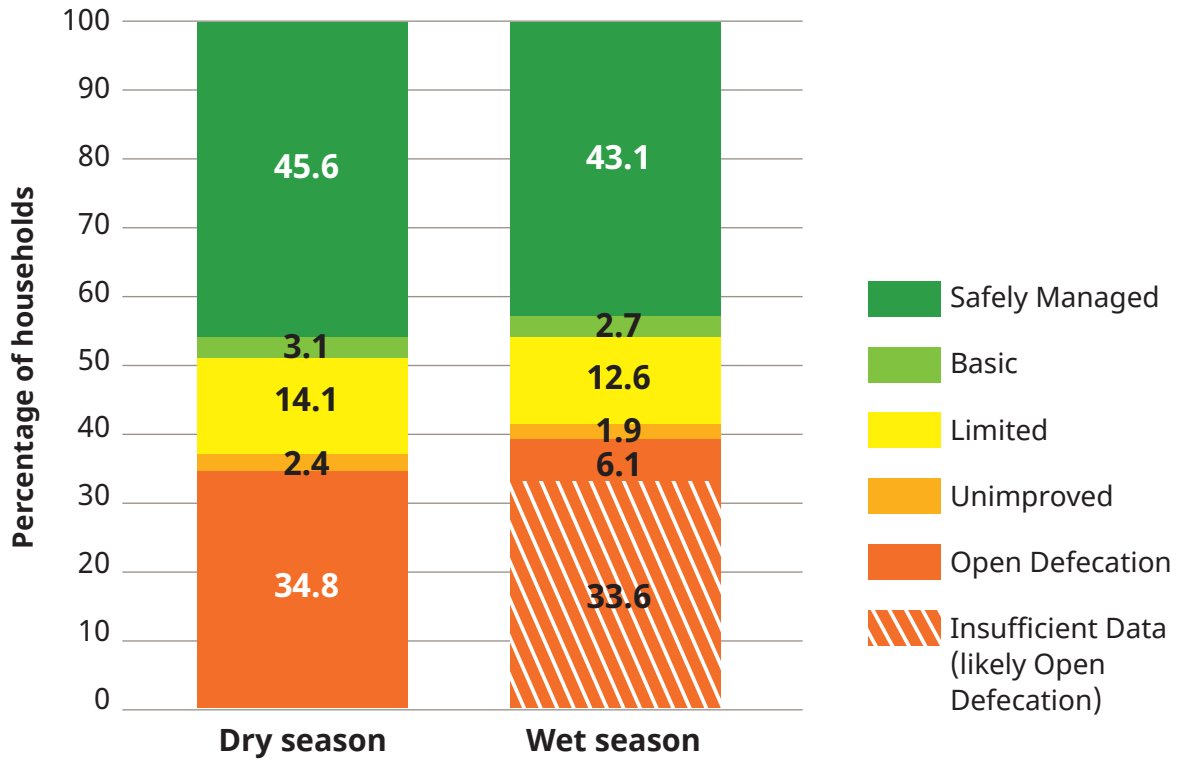


Chart 1 - JMP Sanitation Service Levels, Province

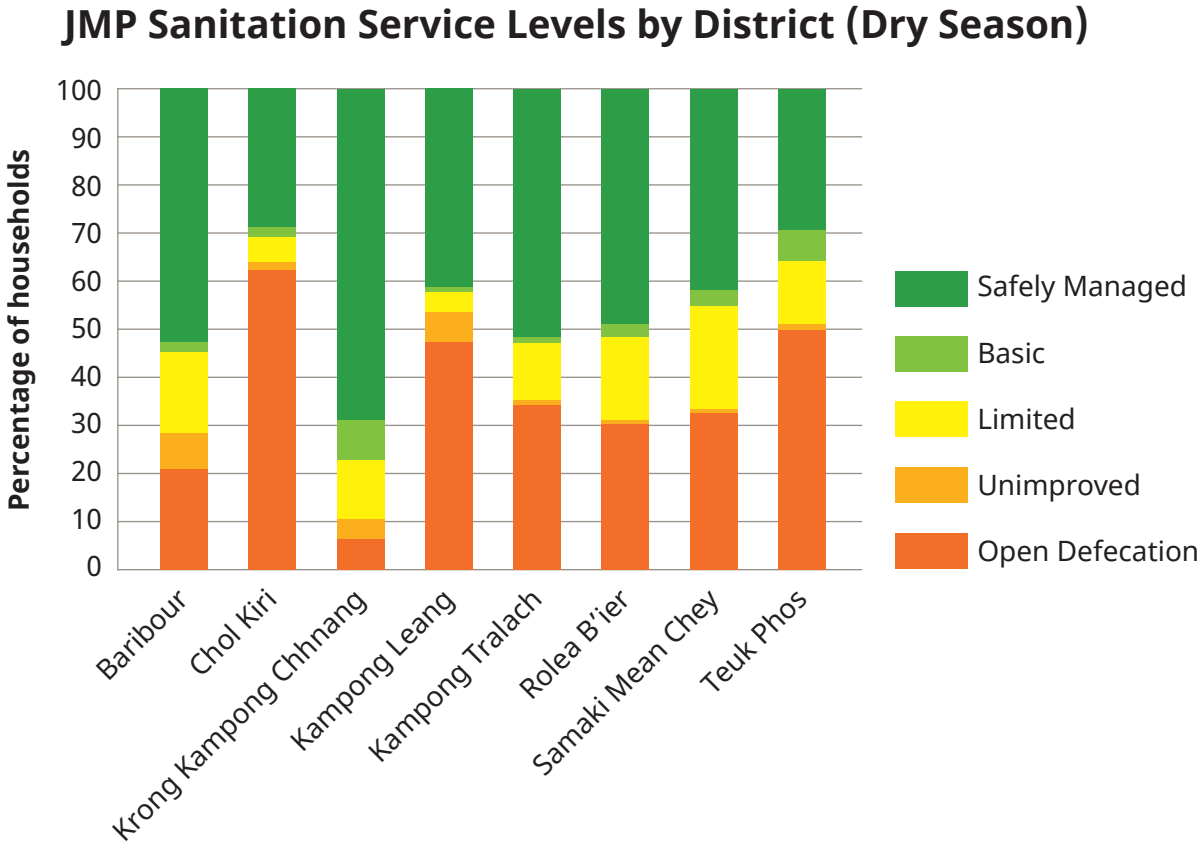


Chart 2 - JMP Sanitation Service Levels in Dry Season, by District

WASH Engineer

Job Title: WASH Engineer (Water, Sanitation and Hygiene (WASH) Sector)

Location: Kampong Chhnang and Pursat

Report to: Team Leader

Purpose of position

The **WASH Engineer** will work to ensure that water, sanitation and hygiene (WASH) project are implemented effectively, professionally, and in accordance with the culture and practices of the local population and CMEI's Project.

Key responsibilities

- Coordinate and work with local government institutions, nongovernmental organizations, community based organizations and local communities in order to ensure the smooth execution of water and sanitation infrastructure activities.
- Participate in baseline assessments of community WASH infrastructure, including at schools, health facilities and private/public water points.
- Conduct technical assessments of selected WASH infrastructure identified for construction and rehabilitation.
- Prepare technical intervention designs and BOQs as well as specifications.
- Assist the Team Leader in preparing contracts and supervising contracted works to ensure compliance with technical requirements and schedules.
- Monitor ongoing projects and prepare for handover of completed works to communities and local authorities.
- Responsible to monitor the daily latrines construction process and other infrastructures process including the preparation of contracts and insure the planned quantity of water is provides in the right way.
- Facilitate water-testing activities to ensure water quality improvements and sustainability over time.
- Coordinate and follow up the water treatment at all levels and at water sources in particular.
- Liaise with community infrastructure management committees in areas where WASH infrastructure is being constructed and rehabilitated to help ensure local ownership and assist in developing sustainable mechanisms for operations and maintenance.
- Ensure accordance with CMEI's standards and local gender related sensitivities.
- Assist in the solid waste infrastructure discussions.
- Assist in surveying activities within planned network areas, particularly in the identification of current sanitation infrastructure for the surveyed houses and feasibility / cost estimate of connecting to network (and completing latrine superstructure if required).
- Perform other duties as required

Curriculum Vitae (CV) for Proposed National Experts

1	**Proposed Position**	**WASH Engineer**
2	**Name of Firm**	PADEK/WEDC
3	**Name of Expert**	**Veth Voeun**
4	**Date of Birth:** 04-Oct-1991	**Citizenship**: Cambodian
5	**Complete personal contact details: #...,** village Chrey Mouroy, district Sombour meas, commune mour kompur in Kandal province Email: vethvoeun07@gmail.com Tel: 078 97 38 09 / 093 48 35 48	

6. Education:

Name of educational institution	Dates attended	Degree obtained
National Polytechnic Institute Of Cambodia	2011-2015	Bachelor Degree
Bak Touk High school in Phnom Penh	2008-2011	Bacc II

7. Membership in Professional Associations:

- National Centre for Disaster Management (NCDM);
- Humanitarian Response Forum (HRF) in Cambodia;
- Cambodian Humanitarian Forum (CHF) in Cambodia;
- Disaster Risk Reduction Forum (DRR Forum);
- Sphere Technical Working group and focal point.

8. Other Training:

- Finished short course Training aboutModelling, Analysis and Design of High Risk Building Structure using ETAB and SAFE at Mony Akademia
- Joint in the training about Climate Change with Urban Poor Women Development UPWD and Sahmakum teang tnaut (STT)
- Joint in the Conference City For All best on how to development Phnom Penh City
- Joint in the training on Spatial Planning Lab

9. Countries of Work Experience: Cambodia

10. Languages:

	Level of Proficiency (Mother tongue, Excellent, Good, Fair, Poor)		
Language	**Speaking**	**Reading**	**Writing**
Khmer	Mother tongue	Mother tongue	Mother tongue
English	Fair	Fair	Fair

11. Employment Record:

From:	2017	**To:**	2019
Employer	People In Need Cambodia (PIN)		
Position held	Civil Engineer		
From:	2015	**To:**	2017
Employer	Dragon Lin Construction Company		
Position held	Civil Engineer		

Adequacy for the assignment:

12. Detailed Tasks Assigned	13. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned

- Civil Engineer	**Name of Assignment or Project:** Agro-processing Career development, Technical training, and Improved Vocational Education for Youth(ACTVIE for Youth) **Year:** January –September/2019 **Location:** Kompong Chnang Province **Client:** People In Need Cambodia (PIN) **Main Project Features:** o Improve Canteen place for students and teacher are eating o Improve good environment in school o Help students that fall BACCII can continue their study food Processing course o Help youth are have skill **Position held:** Civil Engineer **Activities Performed:** o Construction canteen o Rebuilding school o BOQ and Cost estimation o Technical Drawing o Quotation of material o Site control and check quality of building (Rebar connection, formwork, and concrete work) ***Activities performed are related to tasks**:* • *BOQ and cost estimation budget planning* • *Design structure of Canteen* • *Site Inspection on structure (Foundation, beam, column, floor concrete and roof construction)* • *Site Inspection on finishing(brick wall, netting wall, painting wall, electricity and water supply system)* • *Survey cost of material in market* • *Maintenance school (Push down wall, painting wall, floor and wall tile install)* • *Design water Tank support in kompong Tralach High School*
	Name of Assignment or Project: Disaster Risk Reduce (DRR) and Early Warning System 1294 (EWS1294) **Year:** January –September/2019 **Location: Kompong Cham, Prey Veng, Thbong Kom Province** **Client:** People In Need Cambodia(PIN) **Main Project Features:** o People live in safe place o Early time to know risk of disaster o Reduce people die by water flooding o Improve sanitation and hygiene o Bring animal to safe site on time **Position held:** Civil Engineer **Activities Performed:** • Backfilling soil for safe site • Toilet construction • Register Early Warning System 1294 ***Activities performed are related to tasks**:* • *BOQ and cost estimation budget planning* • *Design structure of Toilet*

	• *Site survey volume of soil to backfilling at Safe site construction* • *Training people how to staying in safe if have flooding* • *Install Sensor to measure level of water flooding(Koh Kong, Prey Veng, Kompong Cham, Komport and Sihaknouk province)* • *Training how to register EWS 1294*
	Name of Assignment or Project: Human Rights Based Spatial Planning , Disaster Risk Reduction, Sub-Granting Scheme, Small Scale, Renewable Energy **Year:** September 2017-December 2018 **Location:** Phnom Penh, Koh Kong **Client:** People In Need Cambodia (PIN) **Main Project Features:** o Improve living of people o Improve livelihood to support family o Construction road and drainage system and make community to transport o Improve sanitation and hygiene in community by supply material for construction toilet o Help people live in safe place while flooding water by Early Warning System 1294 **Position held:** Civil Engineer **Activities Performed:** BOQ and cost estimation and control site construction in community**,** quotation of material for toilet, install street lamp in community, road construction in community, drainage system construction in community ***Activities performed are related to tasks****:* • *Assessments on wash in kompong Speu province* • *Assessment on wash in kratie province* • *Assessment on habitat in Phnom Penh* • *Training on wash and building capacity* • *Renewable Energy program in Koh Kong Province* • *Mud Crap fencing in koh kong province* • *Construction station battery charge by Solar System at Koh Kong (koh kapik)* • *Mix-aggregate road construction in Phnom Penh (Prek Takong community and Cheung Ek community)* • *Implementation Toilet construction in Phnom Penh(Cheung Ek community)* • *Implementation install Solar Street light in Phnom Penh (Min ta pheap community, Derm Srol community, prek Takong community and Cheung community)*
	Name of Assignment or Project: Private building (Condo and villa) **Year:** November 2015-September 2017 **Location:** Phnom Penh**,** PoiPet **Client:** Private **Main Project Features:** for rent to people to live and office **Position held:** Civil Engineer **Activities Performed:** Control site construction, BOQ, Cost Estimation and drawing structure ***Activities performed are related to tasks****:*

	• *Structure Design (foundation, beam, column, slab, stair and roof)* • *Drill pile construction* • *Pile Cap construction* • *Beam construction* • *Import and expert material of construction* • *Implementation of construction process* • *Finishing work (décor work wall construction, plastering wall, painting wall, tile construction, ceiling install and electricity and water system in building)* • *Pushing down railway Poi Pet station some structure (Beam, column and slab)* • *Maintaining (beam, column and slab) railway station at Poi pet* • *Design steel structure at Poi Pet Station* • *Import and export material of construction* • *Implementation labor or management labor at site construction*

13. Certification:

I, the undersigned, certify to the best of my knowledge and belief−	Yes	No
this CV correctly describes my qualifications and my experience.	☑	☐
I am employed by the Executing or the Implementing Agency.	☐	☑
I am a close relative of a current ADB staff member.	☐	☑
I am the spouse of a current ADB staff member.	☐	☑
I am former ADB staff member.	☐	☑
If yes, I retired from ADB over 12 months ago	☐	☐
I was part of the team who wrote the terms of reference for this consulting services assignment.	☐	☑
I am sanctioned (ineligible for ADB engagement).	☐	☑

I certify that I have been informed by the firm that it is including my CV in the proposal for integrate **Urban Environmental Management in the Tonle Sab Basin –(RRP CAM 42285-013)**, **package IV: NGO support for community Mobilisation and Environmental Improvements.** I confirm that I will be available to carry out the assignment for which my CV has been submitted, in accordance with the implementation arrangements and schedule set out in the proposal.

I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

[Signature of expert ~~or authorized representative of the firm~~] Date:

Full name of authorized representative:

ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន
Community Mobilization and Environmental Improvement CMEI

Project Coordinator
Job Title: Project Coordinator (Community Management, Project Management, Public Health and Water, Sanitation and Hygiene (WASH) Sector)
Location: Kampong Chhnang and Pursat
Report to: Team Leader

Purpose of position
The **Project Coordinator** will work to ensure that project actions of the Project CMEI run smoothly and the actions are implemented effectively, professionally, and in accordance with the culture and practices of the local population and CMEI's Project.

Key responsibilities
- Coordinate and work with local government institutions, nongovernmental organizations, community based organizations and local communities in order to ensure the smooth execution of CMEI project activities.
- Field coordination working closely with field staff, partners' agencies and Government Departments.
- Organizing internal meetings, Leading reporting to donor, working with teams across both agencies to follow up on implementation, identifying gaps and challenges and working with teams to find a solution.
- Prepare the provincial work plan, implementation of work plan,
- Coordinate the implementation of the program, monitor field activities across the province and ensure respect of implementation deadline.
- Ensure consistency of interventions between the provinces and work with the CCA, WASH coordinators and MEAL coordinators to capture lessons learnt.
- Document the processes, lessons learned, best practices, case studies and other relevant information regularly
- Additional scope for solid waste consultations and assessment and ID Poor survey for networked sewer areas
- Liaise with community infrastructure management committees in areas where WASH and SWM infrastructure is being constructed and rehabilitated to help ensure local ownership and assist in developing sustainable mechanisms for operations and maintenance.
- Ensure accordance with CMEI's standards and local gender related sensitivities.
- Assist in the solid waste infrastructure discussions.
- Assist in surveying activities within planned network areas, particularly in the
- identification of current sanitation infrastructure for the surveyed houses and feasibility/ cost estimate of connecting to network (and completing latrine superstructure if required).
- Perform other duties as required

Form TECH-5 Curriculum Vitae (CV) for Proposed National Experts

1	**Proposed Position**	Provincial Project Coordinator
2	**Name of Firm**	PADEK-WEDC
3	**Name of Expert**	MAO Chakriya
4	**Date of Birth:** 01 January 1981	**Citizenship**: CAMBODIAN
5	**Complete personal contact details**: House #37B, st.200R, Krol Kor village, Sangkat Kilomet 6, Khan RusseyKeo, Phnom Penh. Email: maochakriya@gmail.com, Phone 012/15993139	

6. Education:

Name of educational institution	Dates attended	Degree obtained
Sisovath Hight School	1997	2000
National University of Management	2000	2004

7. Membership in Professional Associations:

None

8. Other Training:

- Six days of July-Sept 2019: Certificate of THE WOMEN OF WORTH by ERIKS Development Partner.
- 24th to 26th of October 2018: Certificate of "Monitoring and Evaluation Training" by CHAB DAI COALITION ORGANIZATION.
- 29th to 31st March 2017: Certificate of training course on "Social Work and Case Management" by Ministry of Social Affairs Veterans and Youth Rehabilitation.
- October, 2012 to September, 2015: Certificate of community of Practice Project on "Women's Civil and Political Engagement" by Gender and Development for Cambodia (GADC) and CORD Peace through Partnership.
- 27th to 29th August, 2014: Certificate of training course on "Effective Report Writing" by LLFE WITH DIGNITY (LWD).
- 22nd to 25th October, 2013: Certificate of training on the "Climate Change Adaptation for Sustainable Food Security and Livelihood Practice" by Canadian Hunger Foundation (CHF).
- 13th to 17th October, 2014: Certificate of training on the "EFFECTIVE LOBBYING ON ELECTORAL REFORM ISSUES" by International Foundation for Electoral Systems (IFES) supported by USAID.
- 22nd to 25th July, 2013: Certificate of training course on "Gender Mainstreaming into Mitigation and Adaptation of Climate Change" by Gender and Development for Cambodia (GADC).
- 8th to 18th October, 2013: Certificate of the Sub-National Training Course on "Humanitarian Response Disaster Risk Reduction Safe communities and sustainable development through disaster risk reduction" by Asian Disaster Preparedness Center (adpc).
- 19th September to 07th December, 2012: Certificate of TOT Training Course on Community Based Disaster Risk Reduction by Humanitarian Aid and Civil Protection (DCA/CA) Cambodia.
- 16th to 18th November, 2011: Certificate of the National Training Course on Food Security and Nutrition (FSN).
- 7th to 9th September, 2009: Certificate of workshop on BASIC HIV/AIDs RESPONSE IN THE WORKPLACE by Khmer HIV/AIDS NGO Alliance (KHANA).
- 23rd to 25th November, 2009: Certificate of The Human Rights Based for Development (Rights and Need Based and Community Based for Advocacy) by ADHOC.
- 2006: Certificate in three-week Community Level Course on Analysing Development Issues by Cooperation Committee for Cambodia (CCC).
- 7th day 2015: Training on Gender and Development organized by Padek.
- - 7th day 2005: Training on Project Management in Community Development Organized by Padek Siem Reap Province.

9. Countries of Work Experience: Cambodia

10. Languages:

	Level of Proficiency (Mother tongue, Excellent, Good, Fair, Poor)		
Language	**Speaking**	**Reading**	**Writing**

Khmer	Mother tongue	Mother tongue	Mother tongue
English	Fair	good	Fair

11. Employment Record:

From:	2004	**To:**	2005
Employer		Partnership for Development in Kampuchea (PADEK)	
Position held		Volunteer on Community Development Field Facilitator in Chart Small Medium Enterprise	
From:	2005	**To:**	2011
Employer		Partnership for Development in Kampuchea (PADEK)	
Position held		Community Development Field Facilitator	
From:	2011	**To:**	2012
Employer		Partnership for Development in Kampuchea (PADEK)	
Positioned held		Area Support Unit Team leader (TL)	
From:	2013	**To:**	2016
Employer		Partnership for Development in Kampuchea (PADEK)	
Position held		Program in Chart Responsibilities Gender and HIV/AIDS	
From:	2016	**To:**	2018
Employer		M'Luprussey Organization (MRO)	
Positioned held		**Organization Learning Officer (M&E Learning Officer)**	
From:	2018	**To:**	2019
Employer		M'Luprussey Organization (MRO)	
Position held		Residential Care Director Support Network Coordinator	

Adequacy for the assignment:

12. Detailed Tasks Assigned	**13. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned**
	Name of Assignment or Project: Community Empowerment and Livelihood Improvement. **Year: 2004** **Location: Svey Reang Province.** **Client: Partnership for Development in Kampuchea (PADEK)** **Main Project Features:** the program supports to the poorest communities in 3 communes in Svey Reang province, Mukda commune, Angpreaksre commune, Angdoung por commune. the program was focused on 1. Strengthen and Build Organization, 2. Food security and income generation, 3. Health, 4. Education and Culture. **Position held: Volunteer on Community Development field facilitator** **Activities Performed:** - Selected core groups for extension of SHG (Self Help Group) process - Organized and monitored Self Help Groups (SHGs) - Facilitated in monthly SHGs meetings - Organized Village and Commune Self Help Group Association (VSHGA and CSHGA) - Conducted workshop on SHGs and annually general assembly - Formed Self Help Group and Loan collection

	- Selected Village Development Committees (VDCs), Commune Development Committees (CDCs) and Community Based Organization (CBOs) - Coordinated with CBOs and helped them to develop quarterly and monthly planning. - Monitored CBOs' work during they implement their works in community - Coordinated their travel and report - Intergraded and encouraged women into social development - Developed annual plan in cooperation with commune council and village leaders at village level - Facilitated in experts' selection of CSAC (Commune Sustainable Agriculture Committee), CLAC (Commune Livestock Agents' Committee), CHAC (Commune Health Agents' Committee), CGC/HIV/AIDs (Commune Gender Committee), CCRC (Commune Conflict Resolution Committee), and PTA (Parent Teacher Associations). - Facilitated in strategy plan, midyear assessment, and annual assessment - Facilitated in expert quarterly meetings - Conducted training on bookkeeping and SHG management to SHG members - Conducted training on community development concept, leadership, proposal and report writing, communication and networking to VDC, CDC and village leaders - Conducted training on organic vegetable growing, home garden, organic fertilizer, dry and liquid compost, herbal pesticide uses and livestock technique to farmers, the experts of sustainable agriculture and animal health agents. - Organized animal's vaccination in target areas - Organized exposure trip on sustainable agriculture and livestock for Sustainable Agriculture Experts and Animal Health Agents.
	Name of Assignment or Project: Community Empowerment and Livelihood Improvement. **Year: 2005 to 2011** **Location: Kompong Speu province.** **Client: Partnership for Development in Kampuchea (PADEK)** **Main Project Features:** the program supports to the poorest communities in 3 communes in Kompong Speu province, Phong commune, Borset commune, Pormreal commune, Pheary Meanchey commune, Katpluk commune, Porchamreun commune. the program was focused on 1. Strengthen and Build Organization, 2. Food security and income generation, 3. Health, 4. Education and Culture. **Position held: Community Development Field Facilitator** - **Activities Performed:** - Conducted PLA /PRA - Selected core groups for extension of SHG (Self Help Group) process - Organized and monitored Self Help Groups (SHGs) - Facilitated in monthly SHGs meetings - Organized Village and Commune Self Help Group Association (VSHGA and CSHGA) - Conducted workshop on SHGs and annually general assembly - Formed Self Help Group and Loan collection

	- Selected Village Development Committees (VDCs), Commune Development Committees (CDCs) and Community Based Organization (CBOs) - Coordinated with CBOs and helped them to develop quarterly and monthly planning. - Monitored CBOs' work during they implement their works in community - Coordinated their travel and report - Intergraded and encouraged women into social development - Developed annual plan in cooperation with commune council and village leaders at village level - Facilitated in experts' selection of CSAC (Commune Sustainable Agriculture Committee), CLAC (Commune Livestock Agents' Committee), CHAC (Commune Health Agents' Committee), CGC/HIV/AIDs (Commune Gender Committee), CCRC (Commune Conflict Resolution Committee), and PTA (Parent Teacher Associations). - Facilitated in strategy plan, midyear assessment, and annual assessment - Facilitated in expert quarterly meetings - Conducted training on bookkeeping and SHG management to SHG members - Conducted training on community development concept, leadership, proposal and report writing, communication and networking to VDC, CDC and village leaders - Conducted training on organic vegetable growing, home garden, organic fertilizer, dry and liquid compost, herbal pesticide uses and livestock technique to farmers, the experts of sustainable agriculture and animal health agents.
	Name of Assignment or Project: Implementation Integrated Community Development. **Year: 2011 to 2012** **Location: Phnom Penh urban area** **Client: Partnership for Development in Kampuchea (PADEK)** **Main Project Features:** The program supports to the poorest communities in 8 communes in, Kmung commune, Saksampov commune, Pongteuk commune, Preysor commune, Phnompenh Thmey commune, Phsar Kandal1 commune, Phsar Kandal 2 commune, Phsar Deumthkov commune, the program was focused on 1. Strengthen and Build Organization, 2. Food security and income generation, 3. Health, 4. Education and Culture. The main activities were formed and strengthen the self-help group, provide working capital for the group, from village experts on sustainable agriculture, Livestock health education, and provide training for capacity building on agricultural technique, health education, and support community to restore small scale irrigation and rural infrastructure. **Position held: Area Support Unit as Team Leader (TL)** **Activities Performed:** Supervised day-to-day implementation of the project are and Overseeing in area to staff supervision and management in ASU. Coordinating with relevant stakeholders at all levels in the implementation of the project's activities - Led the project staff composed and strengthening of different experts. - Supported any matter to staffs in relation to their work and on how to deliver the sustainable development to target beneficiaries. - Provided regular Development and supported to Staff as well as the target beneficiaries - Managing on available resources and time effectiveness and efficiency for

	the project implementation. - Supported local communities and their organizations in identifying development needs and developing cleared plan based on the problem analysis. - Facilitated internal and external project monitoring and evaluation. - Reported periodically on the progress of the project - Assessed training programs - Supervised, evaluated job performance and trained ASU staff - Communication and networking with local authority and development organizations and project beneficiaries - Maintained trustworthy relation with colleagues and project beneficiaries - Coordinated between and among various programs/projects and organizations at different levels. - Developed linkages between like-minded organizations for resources sharing. - Regular monitoring of the project implementation in order to identify strengths and potential improvement areas. - Prepared planning documents and written reports (monthly, quarterly, semi-annual, annual reports) - Networking with relevant stakeholders and beneficiaries.
	Name of Assignment or Project: Implementation Integrated Community Development. **Year: 2013 to 2016** **Location: Phnom Penh** **Client: Partnership for Development in Kampuchea (PADEK)** **Main Project Features:** The program was designed to support the poorest communities in Padek target area at Svey Reay Province, Prey Veng Province, Kratie Province, Kampong Speu Province, Seam Reap Province and OudormeanChey Province. The program was focused on 1. Strengthen and Build Organization, 2. Food security and income generation, 3. Health, 4. Education and Culture. The main activities were formed and strengthened the self-help Group, provided working capital for the group, form village experts on sustainable agriculture technique, health education, and support community to restore small scale irrigation and rural infrastructure and to Empowerment Women in politics at sub-national in kandal province with the project partnership with SILAKA Organization. **Position held: Program in Chart Responsibilities Gender and HIV/AIDs** **Activities performed:** - Worked to ensure the new strategic direction of Padek's program complied with the national policies and development trends - Ensure that the Padek's staff and target project participants have a common understanding on Gender mainstreaming and integration across all program components. Liaison, communication and networking: - Conducted coordination/networking at national and international levels in term of advocacy and fundraising as required - Maintained trustworthy relationships with colleagues and development partners - Networking with relevant organizations, government, and NGOs to advance PADEK's Gender mainstreaming objectives. - Leadership and good Government knowledge provided to Key people at

	sub-national and strengthen to promote women in politics. - Built close relationships with sub-national leaders, CCWC, Commune council, through individual coaching follow up and quarterly meetings. - Strengthen women leaders and young women to ensure that they can lead the meeting or training and report writing. - Conducted awareness forum on Gender - Identified topics to strengthen to Sub-national, CCWC and Young women - Conducted reflection-sharing workshop to sub-national level. - Attended meetings with NGO partners and donors. Planning, monitoring, reporting and documentation: - More focusing on the quality of monitoring with an evidence-based approach and initiate the improvement of these new approaches - Document good practices, lessons learned and change issues and disseminate widely amongst relevant stakeholders. - Through regular field visits and proper planning monitoring and evaluation system, guided the overall program implementation, initiate new direction where necessary and ensure the cohesiveness of PADEK's strategic program. - Studied the various Padek's program strategies and ensure that those program interventions are designed to consciously address women's strategic needs and to improve women's status in Padek's operational areas. Capacity building measure: - Ensure the effective capacity strengthening and functioning of the Gender focal points by coordinating with the various governmental institutions and other related agencies for the resource persons - Ensure that the monitoring and evaluation capacity of Gender focal points have been taken by the ASU staff for carrying out training and post follow-up training action plan - Coordinated the strengthening of ASU staff in analytical skills in related field. - Ensure ongoing capacity building of PADEK's staff after an overall training needs assessment. Gender work: - Ensure that Gender is integrated into all aspects of Padek's program components; - Be active members of the "Gender mainstreaming" team to implement Padek's program. - Ensure a smooth implementation of PADEK's Gender Policy at ASU level. - Initiated the activities that promotes gender and in particular the gender-sensitive mainstreaming in their daily life. - Promoted gender equality in relation to resources, services, opportunities and benefit. - Initiated the mechanism to promote gender participation in planning, monitoring and evaluation process. - Networking with GADC and GADNET - Networking with Ministry of Women Affair - Gender mainstreaming and awareness

	Name of Assignment or Project: Safe communities, transformed by hope, strengthened by stability, for a sustainable future. **Year: 2016 to 2018** **Location: Phnom Penh, Battambang Province** **Client: M'Luprussey Organization (MRO)** **Main Project Features:** The project was design focus on the needs of stakeholders and wants to see changes in their attitudes, behavior and relationships with partners are a good strategy to ensure a high degree of ownership and engagement make this change. The services that M'lup Russey provide to their respective partners include: Provide collaboration and support to key and all levels of authority in all activities in order to continue to promote behavior change behavior towards the realization of all policies for the ultimate good of the child. Train and support the way in which young people living in foster homes and youth who come out of foster homes will be able to make decisions with the right information for their own lives. Train and support technical assistance to make sure that caregiver managers better understand the procedures for safe child integration. Facilitate the management of child care centers to better collaborate with officials of the Ministy of Women's affairs and Non-Governmental Organizations (NGOs) to integrate the child in the community appropriately and prioritize community-based childcare. Support and provide technical support to family in the community that provides emergency care to children not their relatives. This service will provide by the social worker of M'luprussey a well-trained and well performing client. Train and support key members of community so that they can play a role in implementing alternative care. Alternative care policy support for the integration of children and youth from orphanages into the community and use the reflection process. From careful action at the highest level of participation in the initiative level and their own security. **Position held: Organization Learning Officer (M&E)** **Activities performed:** - Served as a positive role model of growth and learning. Pursued personal ongoing learning (e.g. research, courses, workshops, interviews, networking, exploring cultural values/practices, etc. of the Cambodian cultures/subcultures with which M'lup Russey Organization's works, etc.) in areas related to M&E and Organizational Learning. - Assisted the Management Team and Project Managers with planning, developing, conducting and following up on M&E related training for M'lup Russey staff and boundary partners. - Promoted a process of mutual accountability and reported between communities and all those involved by facilitating meetings for project level team members involved in M&E to enable them to help their co-workers assess the efficacy of their current M&E methods and to brainstorm new or modified ones (this assessment should had been done activity by activity as well as with the big picture in mind). - Regularly follow up the monitoring and evaluation of the activities which M'lup Russey staff oversees and that the communities have taken initiative in monitoring. The L,M&E Officer should also assist project level team members involved in M&E the information at their level is kept and how the information is or will used. - Assist with evaluations by helping the Management Team with the following: 1) preparing projects for external evaluations, 2) helping projects to review/interpret data from external evaluations. - Kept and updated research information/maintained integrity of data. - Represented M'lup Russey, it values and work well both within M'lup

	Russey as well as with boundary partners; encouraging appropriate participation of all involved in the work. - Coordinate M&E logistics and perform other related work as may be required, requested or assigned - Promoted a work environment of continuous learning where workers at various levels in M'lup Russey actively seek opportunities (on their own part and for others) for growth and positive change, whether learning from 'successes' or learning from obstacles/errors. - Kept and updated research information/maintained integrity of data on behalf of the M'lup Russey Management Team.
	Name of assignment or project: Safe communities, transformed by hope, strengthened by stability, for a sustainable future. **Year: 2019** **Location: Phnom Penh and Battambang Province.** **Client: M'Luprussey Organization (MRO)** **Main project features:** The project was design focus on the needs of stakeholders and wants to see changes in their attitudes, behavior and relationships with partners are a good strategy to ensure a high degree of ownership and engagement make this change. The services that M'lup Russey provide to their respective partners include: Provide collaboration and support to key and all levels of authority in all activities in order to continue to promote behavior change behavior towards the realization of all policies for the ultimate good of the child. Train and support the way in which young people living in foster homes and youth who come out of foster homes will be able to make decisions with the right information for their own lives. Train and support technical assistance to make sure that caregiver managers better understand the procedures for safe child integration. Facilitate the management of child care centers to better collaborate with officials of the Ministy of Women's affairs and Non-Governmental Organizations (NGOs) to integrate the child in the community appropriately and prioritize community-based childcare. Support and provide technical support to family in the community that provides emergency care to children not their relatives. This service will provide by the social worker of M'luprussey a well-trained and well performing client. Train and support key members of community so that they can play a role in implementing alternative care. Alternative care policy support for the integration of children and youth from orphanages into the community and use the reflection process. From careful action at the highest level of participation in the initiative level and their own security. **Position held: Residential Care Director Support Network Coordinator** **Activities performed:** - Build close relationships with directors through individual meeting - Ensure that directors are steering the ideas for training by using participatory methods - Identify top quality presenters and trainers, contracting them to teach particular modules - Organize a director's progress on the issues trained in, Plan and implement follow-up, monitoring and evaluation using participatory approaches/methods. - Work with residential care director support facilitator to ensure RCC director at Phnom penh city and Battambang province have good cooperation with M'luprussey. - Strengthen the way residential care directors do follow up with young people after reintegration.

	- Work with senior Youth Support Facilitator to ensure that directors and young people have opportunity for discussion. - Organize and coordinate all training logistics, including venues, resources, transport and meals as required to achieve efficient training attendance and delivery.

13. Certification:

I, the undersigned, certify to the best of my knowledge and belief–	Yes	No
this CV correctly describes my qualifications and my experience.	☑	☐
I am employed by the Executing or the Implementing Agency.	☐	☑
I am a close relative of a current ADB staff member.	☐	☑
I am the spouse of a current ADB staff member.	☐	☑
I am former ADB staff member.	☐	☑
If yes, I retired from ADB over 12 months ago	☐	☐
I was part of the team who wrote the terms of reference for this consulting services assignment.	☐	☑
I am sanctioned (ineligible for ADB engagement).	☐	☑

I certify that I have been informed by the firm that it is including my CV in the proposal for **Integrated Urban Environmental Management in the Tonle Sap Basin – (RRP CAM 42285-013), Package IV: NGO Support for Community Mobilisation and Environmental Improvements.**
I confirm that that I will be available to carry out the assignment for which my CV has been submitted, in accordance with the implementation arrangements and schedule set out in the proposal.

I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

[Signature of expert ~~or authorized representative of the firm~~] Date: 12/09/2019

Full name of authorized representative: MAO Chakriya

CURRICULUM VITAE (CV) FOR PROPOSED NATIONAL EXPERTS

1.	**PROPOSED POSITION**	:	Provincial Project Coordinator		
2.	**NAME OF FIRM**	:	PADEK		
3.	**NAME OF EXPERT**	:	Sak Mom		
4.	**DATE OF BIRTH**	:	08-04-1970	**CITIZENSHIP:**	Cambodia
5.	**COMPLETE PERSONAL CONTACT DETAILS**	:	Kampong Chhnang village, Bavel commune, Bavel district Battambong province. H/P 012 322 282/087 265 556 email: sakmom.padek107@gmail.com		
6.	**EDUCATION**	:	• 1986-1990 High School Camp Site • 2007-2010 Bachelor degree of Advantaged Management (CUS Battambong)		
7.	**MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS**				
8.	**OTHER TRAINING**		• March 2017: Training on Emergency Assessment organized by Cambodia Humanitarian Forum (CHF) • March 2015: Certification on Strengthening Emergency Response Capacity by Cambodia Humanitarian Forum (CHF) • August 2014: Certification on Community Based Disaster Risk Reduction in a Changing Climate by Cambodia Humanitarian Forum (CHF) • Janury 2014: Certification on Disaster Risk Reduction Management by Cambodia Humanitarian Forum (CHF • September 2013: Certification on Leadership and Community Health Development and peace building by Asian Health Institution Japan (AHI) Japan country. • December 2011: Certification on HAP & Sphere standard & Application of Quality & Accountability (Q&A) in Food Security and WASH by DCA/CA organization • June 2011: Training on PM&E organized by PADEK • March 2011: Certificate on Peal Building through Community Health and Development by Padek and Asian Health Institute (AHI) Japan, Siem Reap Angkor. • February 2011: ER contingency plan, DRR & CCA program strategies, ER operation Procedure, DRR concept and basic concept of climate change by Oxfam American (OA). • April 2010: Certification on Community Development and Self Help Group Concept and Model by PADEK. • March 2010: Training on Program Development and Management Trainer by Regional Director of ASDECS. • February 2010: Training on Sustainable Livelihood Approach (SLA) by CHF. • December 2009: Training on Community Based Disaster Management by PADEK. • January 2005: Certificate on Data Processing for Province Wide Baseline Survey by Care/MHD/ZOA Cooperation • November 2004: Certificate on Basic Planning Course by Silika and ZOA refugee Care. • March 2004: Certification on Professional Report Writing by Cambodian Research for Development . • March 2002: Certification on Trainer of Teacher for Commune Council by UNOPS/PLG/SEILA program. • January 2002: Certification on Values Based-planning by Heifer International Cambodia. • June 2000: Certification on Participatory Rural Appraisal Course by Cambodian Researchers for Development.		
9.	**COUNTRIES OF WORK EXPERIENCE**		• Cambodia		

10.	LANGUAGESSKILLS	:		Speaking	Reading	Writing
			English	Intermediate	Intermediate	Intermediate
			Thai	Intermediate	Intermediate	Intermediate

11.	EMPLOYMENT RECORD		
	FROM TO	**:**	**May 2017 to Present**
	EMPLOYER	**:**	**PADEK**
	POSITION HELD	**:**	**Project Manager**
	FROM TO	**:**	**February 2016 to April 2017**
	EMPLOYER	**:**	**RCEDO**
	POSITION HELD	**:**	**Project Manager**
	FROM TO	**:**	**Dec 2009 to Dec 2015**
	EMPLOYER	**:**	**PADEK**
	POSITION HELD	**:**	**Project Manager**
	FROM TO	**:**	**Feb 2008 to Nov 2009**
	EMPLOYER	**:**	**CIDO**
	POSITION HELD	**:**	**Project Coordinator (Wastan and agriculture)**
	FROM TO	**:**	**Jan 2005 to Jan 2008**
	EMPLOYER	**:**	**ZOA Refugee Care Cambodia**
	POSITION HELD	**:**	**Project Manager of North-western Rural Development Program (NRDP/ADB)**
	FROM TO	**:**	**May 1999 to Dec 2004**
	EMPLOYER	**:**	**ZOA Refugee Care Cambodia**
	POSITION HELD	**:**	**Project Assistant Of Community Development**
	FROM TO	**:**	**March 1996 to April 1999**
	EMPLOYER	**:**	**MFS**
	POSITION HELD	**:**	**Midwife and AIDs/HIV promoter**

12. DETAILED TASKS ASSIGNED	**13. WORK UNDERTAKEN THAT BEST ILLUSTRATES CAPABILITY TO HANDLE THE TASKS ASSIGNED**
	Name of assignment or project: Building Community Livelihood Resilient to the Impact of Climate Change **Year:** Present **Location: Siem Reap province** **Client: PADEK** **Main project features:** The focus on strengthening to the community as training on agriculture, Saving Led-Microfinance, Community Based Disaster Risk Management, Climate Change Adaptation, support CCDM to develop DRR and Response plan, support agriculture input to farmers. **Position held:** Provincial Team Leader **Activities performed:** • The provincial Team Leader is responsible for providing overall leadership and management for their Area Support Unit (ASU) in accordance with relevant Padek programs, strategies and policies. The ASU Team Leader works to fulfill Padek's overall mission, vision and goal through developing and maintaining good relationships and networks with relevant internal and external stakeholders, including staff, community groups, local leaders, government departments and other NGOs. The provincial Team Leader undertake to coordinate the DRR/CCA mainstreaming and Humanitarian Response/Emergency Response works in close collaboration with the program officers and relevant stakeholders at National and sub-national levels and other agencies. The provincial Team Leader reports to the Programme Coordinator, Programme Support Unit, and also directly supervises

		Project Officers and other staff.
		Name of assignment or project: Community Based Disaster Risk Reduction **Year:** Feb 2016 to April 2017 **Location:** Banteay Meanchey province **Client:** RCEDO **Main project features:** Strengthening to DCDM, DRRVC and community on Disaster Risk Reduction Management and Climate Change adaptation. Pond and canal production and provide training on agriculture technical that adapted to Climate Change. **Position held:** Project Manager **Activities performed:** • Lead and engages the project staff and target people to participate in CBDRR project activities such as the village meeting/ training /workshop awareness. • Build the capacity of the project team DRRVC member and voluntary farmers for Self Help Group (SHG). • Provide the technical advisor to project staff, CCDM, VDMG for implementing CAPs, water resources management, CCA/DRR awareness and other intervention activities like rice bank, rice production, chicken raising and vegetable production. • Leading and monitoring the project staff and other key stakeholder in HVCA process, mapping, CC& DRR intervention with the target commune. • Recording Maintaining all project data of the beneficiaries of target community project asset. • Coordinating and building the relationship with PCDM, local authorities & line government officers like PDAFF, PDWA, DWMH, PDH officers and others NGOs. • Prepare the Quarterly work plan, Monthly work plan with budgeting, financial project request and all financial supporting documents. • Lead and prepare monthly report, quarterly report, training report, all minutes and annual progress report submits to PM and ED as deadline. • Coordinate between and among various program/project and organisation at difference levels • Develop linkages between like-minded organizations for resource sharing • Regard monitoring of the project implementation in order to identify strengths and potential improvement areas • Coordinate training on CBDRR for Commune Committee for Disaster Management (CCDM) • Work closely with director and regularly consult on project activities to track performance and progress. • Conduct regular monitoring of the project implementation in order to track progress, identify strengths and identify potential area for improvement.
		Name of assignment or project: Integrated Community Development Program **Year: Dec 2009 to Dec 2015** **Location:** Oddar Meanchey Province **Client: PADEK** **Main project features:** To empower and strengthening to Civil Society organization management and coordinating resources, improving the food security and income generation of their communities. Civil society organization able network with government and other to educate their communities and in order to promote and implementation health and sanitation. **Position held:** Project Manager **Activities performed:** • The provincial Team Leader is responsible for providing overall leadership and management for their Area Support Unit (ASU) in accordance with relevant Padek programs, strategies and policies. The ASU Team Leader works to fulfill Padek's overall mission, vision and goal through developing and maintaining good relationships and networks with relevant internal and external stakeholders, including staff, community groups, local leaders, government departments and other NGOs. The provincial Team Leader undertake to coordinate the DRR/CCA mainstreaming and Humanitarian Response/Emergency Response works in close collaboration with the program officers and relevant stakeholders at National and sub-national levels and other agencies. The provincial Team Leader reports to the Programme Coordinator, Programme Support Unit, and also directly supervises Project Officers and other staff. • Oversee and supervise the day-to-day operations and management of the ASU

		office and the target project areas, including staffing, resources, implementation and project delivery, monitoring and evaluation, networking and regular travel to target areas. Work closely with the Program Coordinator and the M&E Officer in the monitoring and evaluation of programs and activities and provide assistance as required. Maintain close communication and good relationships with relevant stakeholders/beneficiaries to track program performance and to determine areas for improvement .Support local communities in identifying their development needs and wishes of the community, and help develop a village strategy for each village in the target area in response to these needs.
		Name of assignment or project: Water Sanitation and Hygiene **Year:** Feb 2008 to Nov 2009 **Location:** Oddar Meanchey **Client:** CIDO **Main project features:** Strengthening to the Water Use Group Committees and the communities how to manage the water and how to use water, Provide Hygiene promotion to the communities, the communities having access to assured source of clean water, reduced rate of number people diarrhea. **Position held:** Project coordinator **Activities performed:** • Establishing, monitoring and organizing of the WSUG's to assist of water ponds, filtration system • Assist in monitoring the technical aspects of the water pond and water filtration system. • Prepare design training manual, lesson plan, leaflets, hand book and poster. • Facilitate the WSUG's and villagers to involve all implementation activities and ensure they understand all implement issue and sustainable keys factor. • Form and provide the capacity building to WSUG's at all water point. • Establish and providing training topics focused on role and responsibility and hygiene with health issues related to WSUG's. • Monitoring and evaluation the WSUG's task responsibilities and their role after received the training. • Form and strengthen women self-help groups (SHGs) • Organize WASH campaign to the communities cooperated with Health Center and Water Management use Group Committees. • Assist the technical supervisor in project monitoring and organizing. • Conducted monthly, quarterly plan and report to program manager.
		Name of assignment or project: Community Development **Year:** Jan 2005 to Jan 2009 **Location:** Oddar Meanchey **Client:** ZOA Refugee Care **Main project features:** Focus on capacity building to Village development committee (VDC) and commune council conduct the infrastructures as road and pond. **Position held: Project Manager of NRDP/ADB** **Activities performed:** • Managing overall NRDP project, implementation, project cycle planning, monitoring and evaluation of all the project development activities in the area attributed according to the targets determined for area. • Demonstration Community Development, pro-poor concept, participatory approach and Gender diversity awareness. • Ensure project goals are aimed for at all times including the project intention to alleviate poverty by maximizing the use of local labour on all infrastructure works. • Capacity building to PDRD CD staff to plan and manage NRDP community livelihood and commune council fund management. • Capacity building to commune council for commune fund management. • Monitoring the progress and completion of small scale infrastructure and village action plan. • Planning and organizing CBO training, strengthening and empowering them to be self-sufficient in the future. • Managed and coordinated the project activities 3 districts, 49 target villages. • Participated in the management meeting • Quarterly report to programme manager and donor
		Name of assignment: Integrated Community Development.

Year: May 1999 to Dec 2004
Location: Oddar Meanchey
Client: ZOA Refugee Care
Main project features: The focus on strengthening to the community as training on agriculture, animal raising. Capacity building to VDC and commune council , conducted infrastructures (well, pond, dam and irrigation.
Position held: Project Assistance of Community Development
Activities performed:

- Making budget expenditure and managing the budget for activities plan
- Coordinated with team work to distribute the material need to refugee people
- Managed and coordinated the project activities in 12 target area (need assessment (PRA), conducting, Village Action Plan(VAP) developing, VAP reviewing and VAP follow up, VDC election, VDC training and VDC follow up, Building relationship (Home Visit), Self Help Group(SHG) stimulating, training and follow up, Community organizing, provide road safety campaign awareness to students and mobilizing for intervention project).
- Facilitated quarterly meeting with Parent Teacher Association (PTA)
- Gender mainstreaming to the community
- Facilitated the commune council training and follow up for 2 communes

Name of assignment or project: HIV/AIDs care and STD treatment
Year: March 1996 to April 1999
Location: Banteay Meanchey
Client: Medicines Sans Frontiers (MSF)
Main project features: Help to poor people in the rural area and prostitutes works, soldiers, CMAC and others NGOs by treatment of SDT and provided counseling to HIV people. Prevention on STD and HIV transmit.
Position held: Midwife and HIV promoter
Activities performed:

- Promoted the campaign of Aids/HIV, STD awareness to the porters/workers, prostitutes, staff of NGO's, soldiers, CMAC and the villagers
- Examined and treated to correspondent people of STD
- Consulted/advised to people who in charge of AIDs/HIV, STD
- Worked closely with Project Co-ordinator and Project Adviser at any other work assigned.
- Attended the evaluation and monitoring of project
- Provided the medicine and examination service to people
- Prepared the report of progressive activities (Monthly/Quarterly/Annual) Controlled and distributed the medicine.

13. CERTIFICATION:

I, the undersigned, certify to the best of my knowledge and belief that:		Yes	No
(i) this CV correctly describes my qualifications and my experience.		✓	
(ii) I am employed by the Executing or the Implementing Agency.			✓
(iii) I am a close relative of a current ADB staff member.			✓
(iv) I am the spouse of a current ADB staff member.			✓
(v) I am former ADB staff member.			✓
• If yes, I retired from ADB over 12 months ago			
(vi) I was part of the team who wrote the terms of reference for this consulting services assignment.			✓
(vii) I am sanctioned (ineligible for ADB engagement).			✓

_____
[Signature of expert]

Date:
Day/Month/Year

19 Sept 2019

Project Name:	Loan-3311-CAM Integrated Urban Environmental Management in the Tonle Sap Basin	
Mission Leader Alexander Nash	**Through** Michael White PAU Head, SEUW	**Supervisor** Vijay Padmanabhan Director, SEUW
Supervisor Action and Comments ☐ Approved ☐ More Information Required ☐ For Discussion		
Mission Type Video Conference with MPWT and PIC consultants	**Destination**	**Mission Dates** 23 May 2019 to 28 May 2019 21 July – 1 August 2019 3 – 6 September 2019
Mission Members	May 2019 HE Vong Pisith, Alexander Nash, Virginia Villanueva, Javier Coloma Brotons, Louis Rijk (PMIS), Socheat Srey (PMIS), Dr.Dipankar Chyau Patnaik (PADEK) July 2019 HE Vong Pisith, Alexander Nash, Sophy Ea (CARM), Louis Rijk (PMIS), Socheat Srey (PMIS) Sept 2019 Alexander Nash, Tran Quy Suu (ADB safeguards consultant), Rishi Adhar (GDR), Chanvibol Kim (GDR), Socheat Srey (PMIS), Dr.Dipankar Chyau Patnaik (PADEK)	
Mission Purpose	• Meeting ADB safeguards requirements for Kampong Chhnang Embankment (resolution of stalled package CW04).	
Supervisor Decision Required	• Yes	
Mission Findings **Dates** 2013 2016 (Sept)	• This NTF summarises the findings of three missions. The first mission was the MTR (May 2019) and the subsequent missions were to agree a set of corrective action for safeguards compliance for package CW04, the planned embankment for Kampong Chhnang (“the embankment”). **Findings:** In April 2013 the inception workshop for ADB PPTA project (TA-7986 CAM) held their inception workshop. An interim report was delivered in June 2013 and the final report completed in June 2014. This PPTA was the basis for the subsequent loan project (3311-CAM), which was approved on 10 November 2015 and made effective on 2 March 2016. In May 2013, the Cambodian government initiated a program to provide formal land title to households cultivating lowland (flooded) land in the Tonle Sap region (circular Government Circular No 02 SRNN dated 27 March 2013). The Provincial Authorities (PA) were charged with the task of land allocation. On 2 Sept 2016 the Government issued Sub Decree No. 183 ANK.BK to divide 12.5Ha of public land to the 525 households identified for land	

	grants, following the 2013 circular. A further 5Ha were to be developed used for public amenities and buildings (17.5 Ha in total).
2016 (Oct)	On 20 October 2016, the loan implementation consultant contract was signed with KECC / NIRAS / Key Consultants ("the PMIS consultants").
2016 (Dec)	In December 2016, ADB fielded a mission to Kampong Chhnang which visited the embankment site. The mission noted that the PPTA design was structured specifically to avoid having major resettlement impacts, and that the final detailed design might affect considerably more households than foreseen. This possibility, combined with the observation that the PA was relocating households under the initiative mentioned above, gave rise to the concern that some households would be relocated from areas that were subsequently "project affected" under the DED (the provincial authorities were part of the mission and informed the mission about the ongoing relocations under the separate initiative). The December 2016 mission clarified that "any resettlement in the vicinity of the embankment would be considered related to the project", and recommended that a detailed household survey and inventory of losses (IoL) be completed for households that may be affected by future changes to the alignment. The purpose of this was to ensure that the relevant information for compensation would be captured if the DED design changed, but any households affected by the change had already been moved under the land grant initiative. This recommendation was not included in the Aide Memoire because GDR preferred the (standard) approach of completing a detailed RP once the DED was completed, and also not to deviate from the PPTA alignment.
2017 (Mar)	On 15-27 March 2017 there was an ADB loan review mission which found that the project was in compliance with loan covenants and planned a future discussion to specifically consider safeguards (which took place in April 2017 by video conference). The topographic and geotechnical surveys for the embankment were expected to be completed by 31 July 2017.
2017 (June)	On 14-16 June ADB fielded another mission for both the Tonle Sap 2 and Tonle Sap 1 projects. The first team leader (TL) for the PMIS contract had by then been replaced[1] (the second TL was mobilised in June 2017). DED engineering design on the embankment started in July 2017, with a drone survey of the alignment from the PPTA design completed on 1 August 2017.
2017 (Aug)	On 22 - 29 August 2017 there was an ADB safeguards mission to the embankment, and in the Aide Memoire from this mission it was noted that some of the planned relocation mentioned by the Provincial Authorities had taken place. The mission noted that 42[2] households had been moved from the embankment by the PA and another 40 were *reportedly* preparing to leave, having signed agreements with the PA. The mission was informed that a total of 210 HH would be relocated from the embankment under the PA initiative (between chainage +11.000 to +13.000, the river front section of the planned ADB

[1] Due to the death of the first team leader.

[2] This figure is later reported by GDR as 45 HH, referring to the August mission Aide Memoire.

	embankment works). Of the 210, 117 were identified as "project affected" (i.e. in the final DED alignment). Note: The exact numbers of HH which had been moved by August 2017, and from where exactly, was not confirmed during the mission. The numbers GDR agreed to carry outa detailed measurement survey as soon as possible (on 1 Oct 2017) in order to ensure that all project affected households, including the 42 relocated ones, could be compensated in accordance with the SPS. The DMS was eventually completed between January and March 2018[3], after the DED was completed (December 2017[4]).
2017 (Nov)	On 27 Nov to 2 Dec ADB carried out a mission during which it was agreed with MPWT that the southern section of the embankment would be shortened, and the updated alignment issued to GDR. [Note: the resettlement non-compliance did not involve the southern section]. No Aide Memoire was issued for this mission. GDR's DMS confirmed a total of 210 HH in the embankment area which was planned to be relocated. Of these, 92 had been relocated leaving 118 still residing on the embankment. DMS slips were issued to households surveyed (exact number of slips issued is uncertain[5]). During the DMS exercise, GDR also interviewed the households who had already been removed[6], and noted that detailed measurements were not available for those who had been relocated and would be derived from secondary data.
2018 (Feb)	GDR's corrective actions plan (issued end of Feb 2018) stated that GDR hoped to complete the Detailed RP, using primary and secondary data for all affected households, by the end of May 2018.
2018 (April)	Further meetings were held between the Government and ADB on 3 April 2018 (in Phnom Penh) and 23 July 2018 (Video conference), and a special safeguards mission was held between 21-25 May 2018 by ADB's Cambodia Resident Mission.
2018 (May)	On 9 May 2018 during a meeting between MPWT, the Ministry of Tourism and the Provincial government, a proposed car park from the (inland) central section of the embankment[7], was agreed to be dropped, due to the additional resettlement implications of this component. ADB was informed of this decision by letter on 4 June 2018. This letter also informed ADB of the decision to construct a wide earth embankment along the river front (between the existing road and the river), rather than the narrow retaining wall PPTA design, and proposed a backfill solution for part of the central section. The southern section was described as "unchanged".
2018 (Sept)	A loan review mission was then held in 10-13 September 2018, during which GDR informed ADB that completing the corrective actions was proving more difficult than anticipated, notably for the households relocated by the PA in 2017.

[3] Completed on 30 March 2018

[4] The DED alignment was issued to GDR on the 8 December 2017

[5] The PMIS reported that the DMS identified 143 AH in total (for the entire alignment, not just the troubled river front area).

[6] This was by then reported as 92 HH, who were interviewed between the 6-9 Feb 2018.

[7] South West of the tourist port, not part of the ongoing resettlement issues

2018 (Nov)	On 26 November 2018, GDR informed MPWT that they could not comply with the corrective actions, and therefore, the SPS for the embankment subproject. On 21 December MPWT wrote to MEF to request the cancellation of the subproject and on 6 Feb 2019 MEF wrote to ADB to request the same thing.
2019 (Mar)	On 25 February to 5 March an ADB loan review mission was fielded to develop and agree alternative investments to replace the cancelled subproject and to agree the next steps for the cancelled embankment. No Aide Memoire was issued for this mission while advice was obtained regarding ADB's obligations for compliance on a cancelled sub project, and the definition of a replacement sub project. A complete chronology of the events leading to the embankment non-compliance was prepared (from which this Note to File is extracted) and it was confirmed with ADB's safeguards and legal specialists that before any scope change could be agreed, as per the MEF request dated 6 Feb, the corrective actions would need to be implemented to the maximum extent possible.
2019 (May)	On 23-29 May 2019 the MTR mission was fielded and confirmed the government's intention to apply the loan funds from the cancelled embankment to Kampong Chhnang stormwater drainage and wastewater projects.
2019 (July)	In July 2019, GDR returned to Kampong Chhnang to determine to what extent the corrective actions could be completed, and reported their findings in a new report to ADB, issued on 30 July 2019, during a loan review mission (21 July- 1 August). In this report, GDR established that the households relocated had been relocated under the land grant program[8] (discussed above), and had been relocated on a *voluntary* basis. In the 30 July report, GDR indicated that it will be possible to compensate all of the 123 AH initially identified by the PPTA consultant under the original embankment alignment, provided the Inventory of Loss data collected by the PPTA consultant is made available to GDR. The report also concluded that the difference between the 123 AH of the PPTA report and the 210 HH eventually counted in the DMS must be due to encroachment (87 HH were assumed to have encroached after the cut-off date of the original RP in 2014).
2019 (Sept)	On 3-6 September 2019 ADB fielded another Loan Review Mission dedicated to the implementation of the corrective actions for the embankment to enable the project to proceed and to conclude the MTR Mou. A site visit was undertaken to Kampong Chhnang and the agreed actions from that mission are detailed below.
Other Activities, Meetings, or Findings	•
Recommendations and Next Steps	• It was agreed that an objective method to determine the exact number of households relocated, and the locations from which they were removed, was required. • The agreed method to determine this number is by the use of satellite imagery, starting in 2014, through to 2019. Seven (7) sets of satellite or aerial imagery will be used and a roof count

[8] Until 30 July 2019, the basis for the Provincial Authority's relocation was assumed to be a River Beautification scheme for the 2019 river festival, which took place in Kampong Chhnang in March. GDR clarified and corrected this during their site visits in July 2019.

	conducted for the section of the embankment between the tourist (old) port and the new port[9] (GPS references 12°16' 04.77" N, 104°40' 51.72" E to 12°16' 56.42" N, 104°40' 11.02" E). Roofs on both sides of the road will be included in the count. • GIS Polygons will be drawn for each roof starting in 2014, and each polygon will have the attributes of "date first observed" and "date last observed" so that roofs appearing and being removed can be accurately counted. • After the roof count is completed, three sets of data will be used to attempt to allocate roofs to table of "households" (noting that the relationship between the roof table and the household table is likely to be many-to-many. i.e. one household may own several roofs, and one roof may contain several households). • The three datasets to be used at the PPTA Inventory of Losses table, the Provincial Government relocation and compensation data provided to GDR, and GDRs DMS data. • The match of HH information to polygon will then be verified through the use of interviews with the relocated HHs, in a series of consultation meetings held in the resettlement areas to the north of the embankment. Where individuals cannot be traced, attempts will be made to contact them through their former neighbours identified during the exercise. Google streetview imagery from 2014 will also be used to assist the HH in confirming the exact location of their former dwelling. • When the tables are completed, compensation values will be derived from available data (DMS or IoL) where available and estimated pro-rata based on roof area where not available. • The GIS and consultation exercise should identify all or most HH relocated from the section of the embankment described above. ADB and GDR will then agree which HH are eligible for compensation under the SPS. ADB's position, as stated in 2016, is that given the uncertainty about the final DED for the embankment, any houses relocated from the vicinity would be considered project affected. • GDR will appoint a GIS Specialist to carry out the GIS work [completed 5 Sept 2019] • The PMIS will provide the drone imagery to GDR [completed 5 Sept 2019] • ADB's safeguards specialists from SEOD will: o Validate this proposed list of corrective actions o Validate the table mapping exercise and quality of household asset data through random interviews with the relevant AHs. o Assist in the consultation meetings o Validate the entitlement matrix used for the calculation of compensation o Witness the compensation payment process.
Attachments ☐List of Persons Met ☐Follow Up Letter ☐Project Performance Report ☐MOU/Aide Memoire ☐Time Bound Action Plan ☐Other materials _____	
cc: Director SEUW, Country Director, CARM Safeguards team, SEOD, Louis Rijk, Teemu Jantunen	

[9] This is the only section from which relocation has been undertaken by the PA to the knowledge of ADB, GDR, MPWT and the PMIS, and based a review of satellite imagery from 2014 to 2019.

EWS 1294 National Sharing Workshop
10 Oct 2019

Objective:

- To present EWS1294 as Cambodia's National Early Warning System,
- Raise awareness about EWS 1294 in Cambodia.
- Inform about this year's performance of EWS1294, number of warnings disseminated and people reached.
- Share plan for EWS1294 improvements in the future.
- Ask for recoomendations from relevant DRR Stakeholders.

Agenda:

No.	Time	Thematic	Facilitate
1	08:00 - 08:30	Registration	Sovandara
2	08:30 - 09:00	Opening remarks (PIN, UNDP & NCDM)	Tep Sokha
3	09:00 - 09:30	History and status of EWS 1294	Sam Pov
4	09:30 - 10:00	Coffee break	
5	10:00 - 10:30	Information about EWS 1294 performance in 2019	Tep Sokha
6	10:30 - 11:00	Plan for the future	Federico
7	11:00 - 11:30	What should we do differently? Q&A	Tep Sokha
8	11:30 - 12:00	Closing remarks (PIN, UNDP & NCDM)	Tep Sokha
	12:00 - 13:00	Lunch	Log

Venue:

- In Phnom Penh, Tonle Bassac II Restaurant, in **Malis Room** at ground floor.

Participant:

- Ministry: MAFF, MOWRAM, MRC and MRD (4 pax)
- PCDMs: All provinces that implementing EWS 1294 (21 provinces, one from each province).
- Donor: UNDP, SDC, FAO, ADB, GIZ, USAID, WFP etc. (10 pax).
- NGO: JAG and HRF (10 pax).
- Media: (5 pax).
- PIN (5 pax).
- NCDM (5 pax).

Estimated around 60 people.

Faciliator:

- NCDM (History of EWS 1294, the importance of EWS 1294, number of suscribes and role and responsibility of NCDM in EWS 1294 ect.).
- PIN technial part (how EWS 1294 working: mobile phone, sensors, tower, dashboard ect., performance of EWS 1294 in 2019 up until now, plan for the future)
- Logistic and financial team will support for this event.

សិក្ខាសាលាថ្នាក់ជាតិ
ស្តីពី
ការផ្សាស់ប្តូរយោបល់ និងការចែករំលែកប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤
ថ្ងៃទី ១០ ខែតុលា ឆ្នាំ២០១៩

គោលបំណង៖

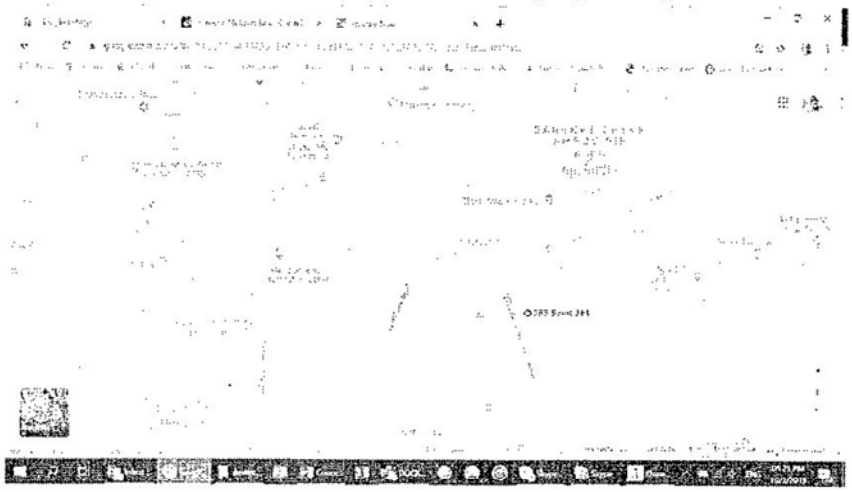
- ដើម្បីបង្ហាញពីប្រព័ន្ធប្រកាសឲ្យដឹងមុន១២៩៤ ជាប្រព័ន្ធប្រកាសអាសន្នថ្នាក់ជាតិក្នុងប្រទេសកម្ពុជា។
- បង្កើនការយល់ដឹងអំពីប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ ក្នុងប្រទេសកម្ពុជា។
- ជម្រាបជូនពីសមិទ្ធិផល របស់ប្រព័ន្ធប្រកាសឱ្យដឹងមុន ១២៩៤ ក្នុងឆ្នាំនេះ ដូចជាចំនួនសារប្រកាសដែលបានផ្ញើចេញ និងចំនួនប្រជាជនដែលបានទទួលសារប្រកាសអាសន្ន។
- ចែករំលែកផែនការសម្រាប់ប្រព័ន្ធប្រកាសឲ្យដឹងមុនដើម្បីពង្រឹងសមត្ថភាពនាថ្ងៃអនាគត។
- ស្នើរសុំមតិយោបល់ពីដៃគូពាក់ព័ន្ធដែលធ្វើការលើវិស័យការកាត់បន្ថយហានិភ័យពីគ្រោះមហន្តរាយ។

រៀបចារ: ៖

ល.រ	ម៉ោង	កម្មវិធី	អ្នកសម្របសម្រួល
១	០៨:០០-០៨:៣០	ការចុះវត្តមាន	កញ្ញា ថាន សុវណ្ណដារ៉ា
២	០៨:៣០-០៩:០០	ការបើកកម្មវិធី	លោក ទេព សុខា
៣	០៩:០០-០៩:៣០	ប្រវត្តិ និងស្ថានភាពប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤	លោក សំ ពៅ
៤	០៩:៣០-១០:០០	សម្រាកអាហារសម្រន់	
៥	១០:០០-១០:៣០	សមិទ្ធិផលរបស់ប្រព័ន្ធប្រកាសឱ្យដឹងមុន១២៩៤ ក្នុងឆ្នាំ ២០១៩	លោក ទេព សុខា
៦	១០:៣០-១១:០០	ផែនការសម្រាប់ថ្ងៃអនាគត	លោក ហ្វេដេរីកូ
៧	១១:០០-១១:៣០	តើយើងគួរតែធ្វើអ្វីផ្សេងទៀត? សំនួរ-ចម្លើយ	លោក ទេព សុខា
៨	១១:៣០-១២:០០	ការបិទកម្មវិធី	លោក ទេព សុខា
៩	១២:០០-១៣:០០	អាហារថ្ងៃត្រង់	

ទីកន្លែង៖

រាជធានីភ្នំពេញ នៅភោជនីយដ្ឋាន ទន្លេបាសាក់ ll បន្ទប់ ម្លិះ ជាន់ផ្ទាល់ដី។



សមាសភាពចូលរួម៖

- ក្រសួងកសិកម្ម រុក្ខាប្រមាញ់ និងនេសាទ ក្រសួងធនធានទឹក និងឧតុនិយម លេខាធិការដ្ឋានគណៈកម្មការទន្លេមេគង្គ និងក្រសួងអភិវឌ្ឍន៍ជនបទ (៤ នាក់)
- គណៈកម្មាធិការគ្រប់គ្រងគ្រោះមហន្តរាយខេត្ត ទាំង ២១ដែលប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ កំពុងដំណើរការ (២១នាក់)។
- ម្ចាស់ជំនួយ៖ UNDP, SDC, FAO, ADB, GIZ, USAID, WFP ជាដើម (១០នាក់)
- អង្គការក្រៅរដ្ឋាភិបាល៖ JAG និង HRF (១០នាក់)
- សារព័ត៌មាន (ប្រព័ន្ធផ្សព្វផ្សាយ ៥នាក់)
- PIN (៥នាក់)
- គណៈកម្មាធិការជាតិគ្រប់គ្រងគ្រោះមហន្តរាយ (៥នាក់)

ការប៉ាន់ស្មានប្រហែល ៦០នាក់

អ្នកសម្របសម្រួល

- គណៈកម្មាធិការជាតិគ្រប់គ្រងគ្រោះមហន្តរាយ (ប្រវត្តិរបស់ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ សារៈសំខាន់ប្រព័ន្ធ ចំនួនអ្នកចុះឈ្មោះប្រើប្រាស់ និងការទទួលខុសត្រូវខុសត្រូវរបស់គណៈកម្មាធិការជាតិគ្រប់គ្រងគ្រោះមហន្តរាយទៅលើប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ ។ល។)
- អង្គការ People In Need បកស្រាយផ្នែកបច្ចេកទេស (ដំណើរនៃប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤៖ ទូរស័ព្ទដៃ ឧបករណ៍វាស់កម្ពស់ទឹក ការបញ្ជូនទិន្នន័យទៅការអង់តែនទូរស័ព្ទ Dashboard ជាដើម ដំណើរការរបស់ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ ក្នុងឆ្នាំ ២០១៩ រហូតដល់ពេលបច្ចុប្បន្ន និងផែនការសម្រាប់ថ្ងៃអនាគត)។
- ក្រុមកំស្តុការ និងហិរញ្ញវត្ថុនឹងជួយគាំទ្រ ព្រឹត្តិការណ៍នេះ។

The Early Warning Message

BEING BETTER PREPARED BEFORE A DISASTER STRIKES.

ប្រព័ន្ធប្រកាសឲ្យ ដឹងមុន ១២៩៤

(អានថា ដប់ពីរ កៅបួន)

UNDP
Empowered lives.
Resilient nations.

CZECH REPUBLIC
HUMANITARIAN AID

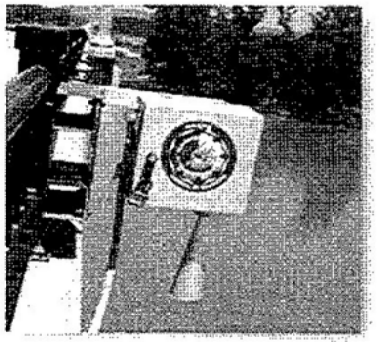
PEOPLE IN NEED
CZECH REPUBLIC

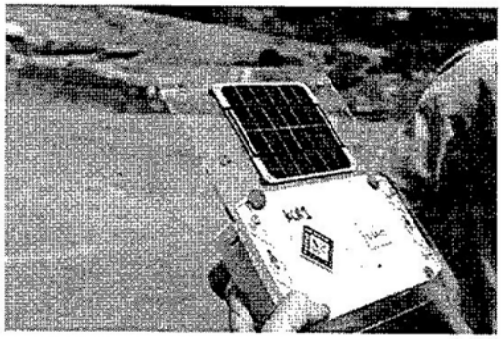
Alliance 2015

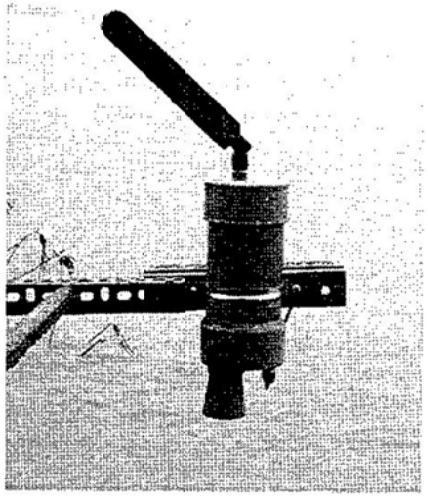
ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤

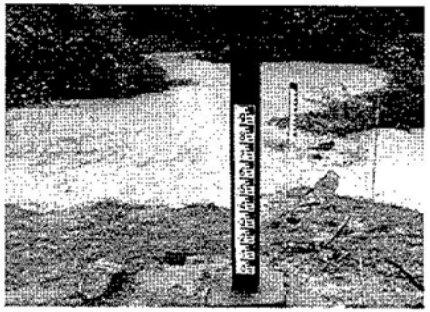
- ១២៩៤ ជាលេខកូដខ្លី របស់ **គ.ជ.គ.ម**. ដែលបានមកពីក្រសួងប្រៃសនីយ និងទូរគមនាគមន៍ ដោយឥតគិតថ្លៃ។

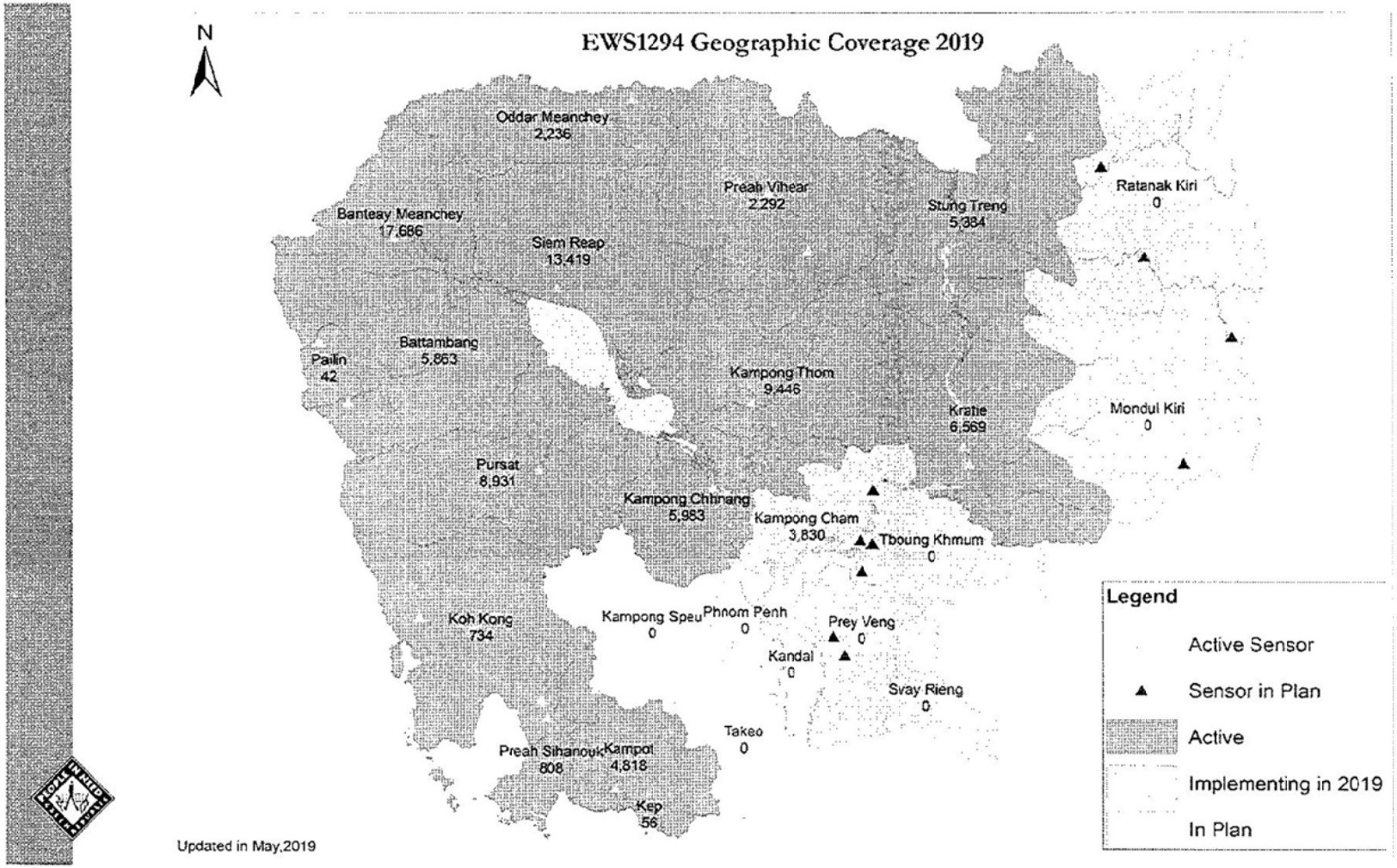
- ចុះឈ្មោះដោយមិនគិតថ្លៃជាមួយប្រព័ន្ធ









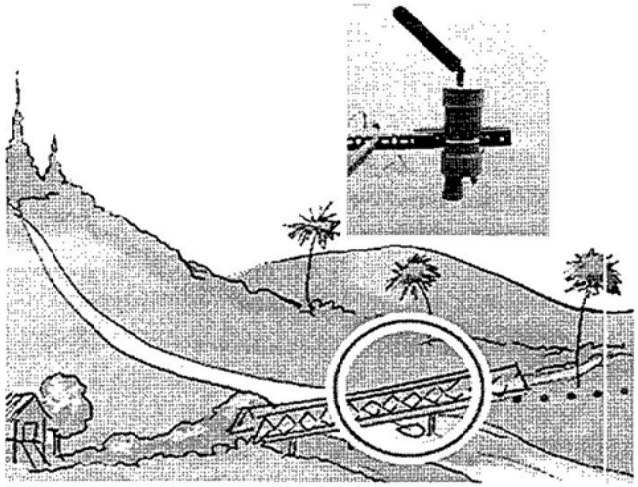

EWS1294 Geographic Coverage 2019
N
Oddar Meanchey
2,236
Preah Vihear
2,292
Ratanak Kiri
0
Stung Treng
5,384
Banteay Meanchey
17,686
Siem Reap
13,419
Battambang
5,863
Pailin
42
Kampong Thom
9,446
Kratie
6,569
Mondul Kiri
0
Pursat
8,931
Kampong Chhnang
5,983
Kampong Cham
3,830
Tboung Khmum
0
Koh Kong
734
Kampong Speu
0
Phnom Penh
0
Prey Veng
0
Kandal
0
Svay Rieng
0
Takeo
0
Preah Sihanouk
808
Kampot
4,818
Kep
56
Legend
Active Sensor
Sensor in Plan
Active
Implementing in 2019
In Plan
Updated in May,2019

1 User Sign Up

Users dial **FREE CALL 1294** and follow the prompts to register province, district, and commune.

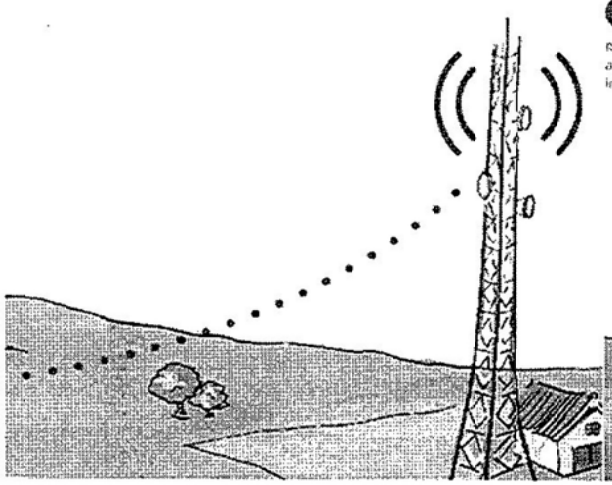
2 Smart Sensors

Like Teomachine, our solar powered, sonar-based water gauge, smart sensors are continuously recording meteorological information around the country.



3 Data Disseminated

The smart sensors send the acquired data across the internet via the Cambodian cellular mobile phone network.



4 Warnings Sent

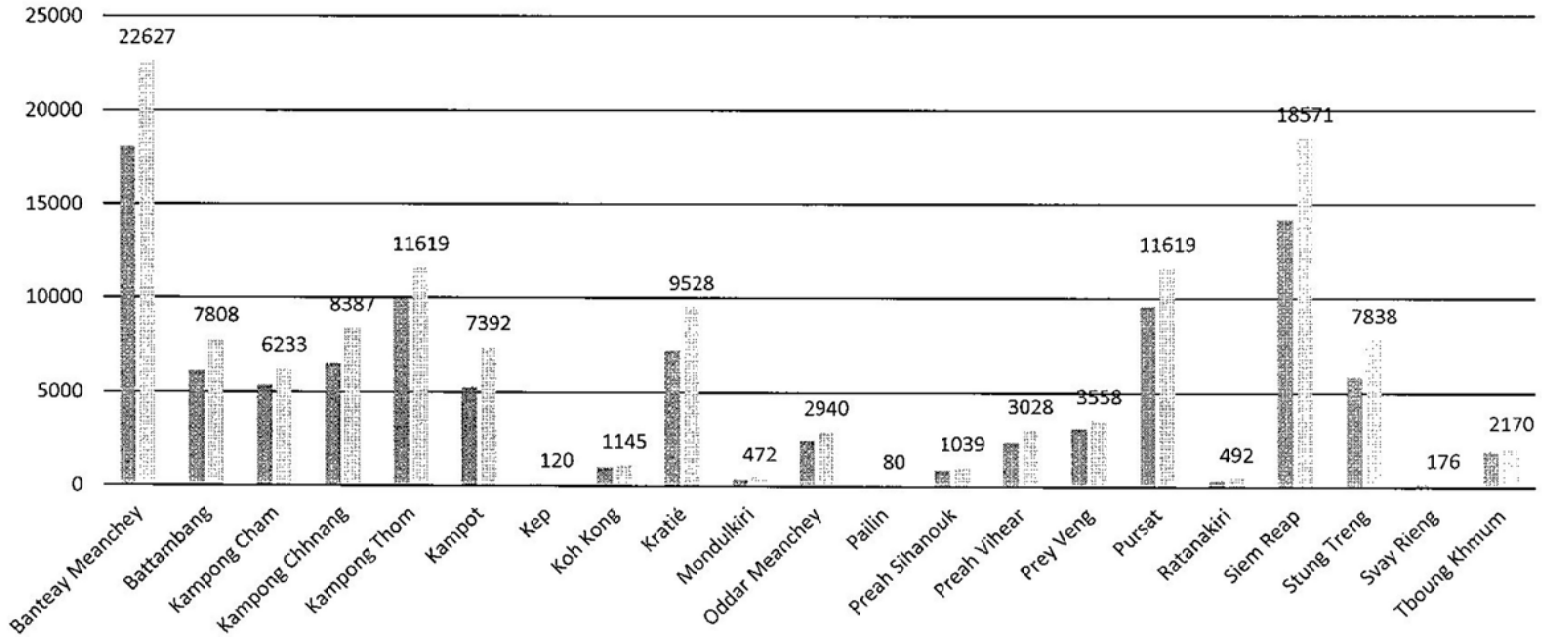
The Provincial Centres for Disaster Management also monitor forecasts to detect natural disasters. If required, EWS 1294 sends warning messages via our Interactive Voice Response (IVR) Platform.

5 Action Taken

Registered users receive calls via their mobile phones and take appropriate action to protect themselves, their families and their livelihoods.

ចំនួនអ្នកចុះឈ្មោះចូលក្នុងប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤

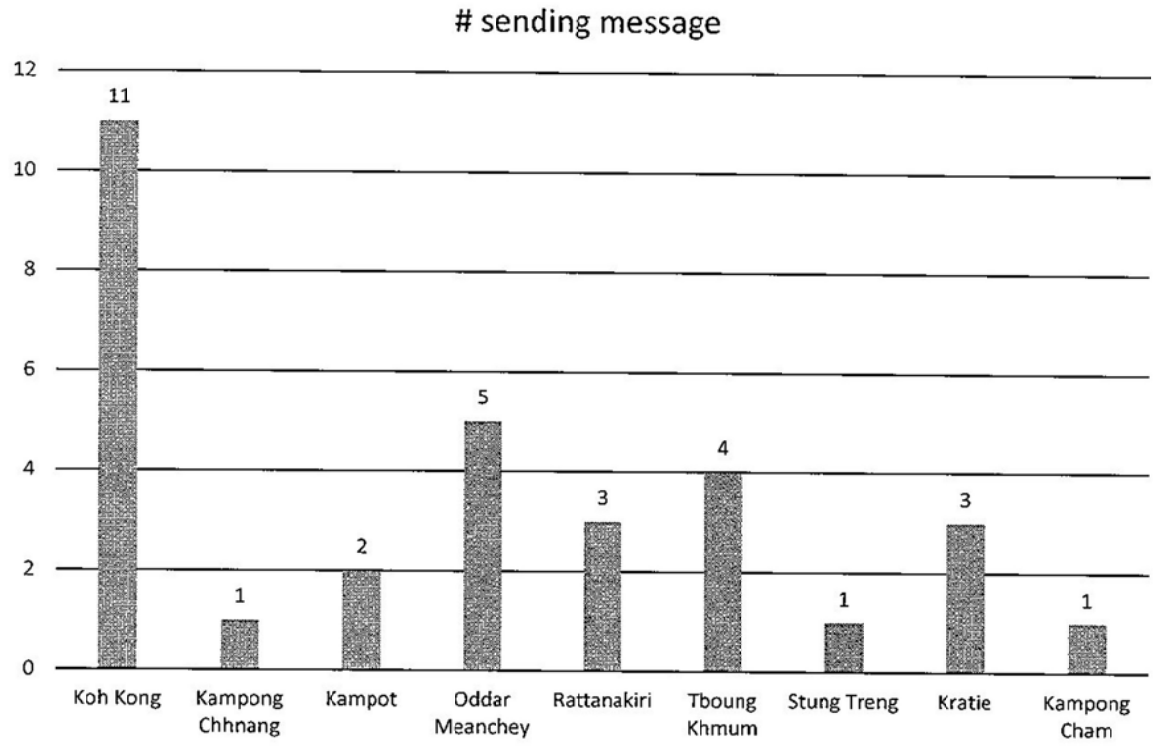
Subscriber into EWS 1294



	Sum of Subscriber	Sum of Subscription
Grand Total	101,176	126,842

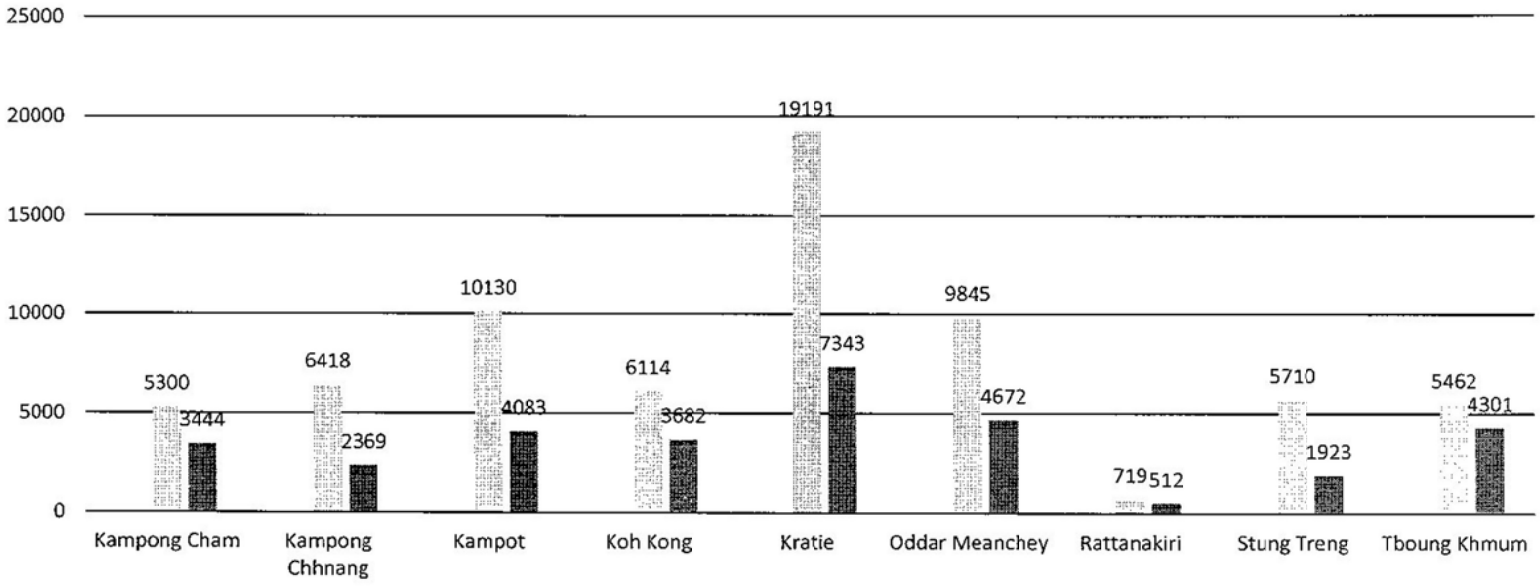
ចំនួនសារដែលបានផ្ញើរចេញ ក្នុងខែសីហា និងកញ្ញា ឆ្នាំ២០១៩

Warning messages sent out Aug - Sept 2019



ចំនួនសារដែលបានផ្ញើរចេញ ក្នុងខែសីហា និងកញ្ញា ឆ្នាំ២០១៩

Warning messages sent out Aug - Sept 2019



Sent	56,883
Received	25,159
Received in %	44%

Funded by
European Union
Humanitarian Aid

Empowered lives.
Resilient nations.

CZECH REPUBLIC
HUMANITARIAN AID

CZECH REPUBLIC
DEVELOPMENT COOPERATION

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development
and Cooperation SDC

ផែនការប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ នៅថ្ងៃអនាគត

Future EWS 1294 Plan

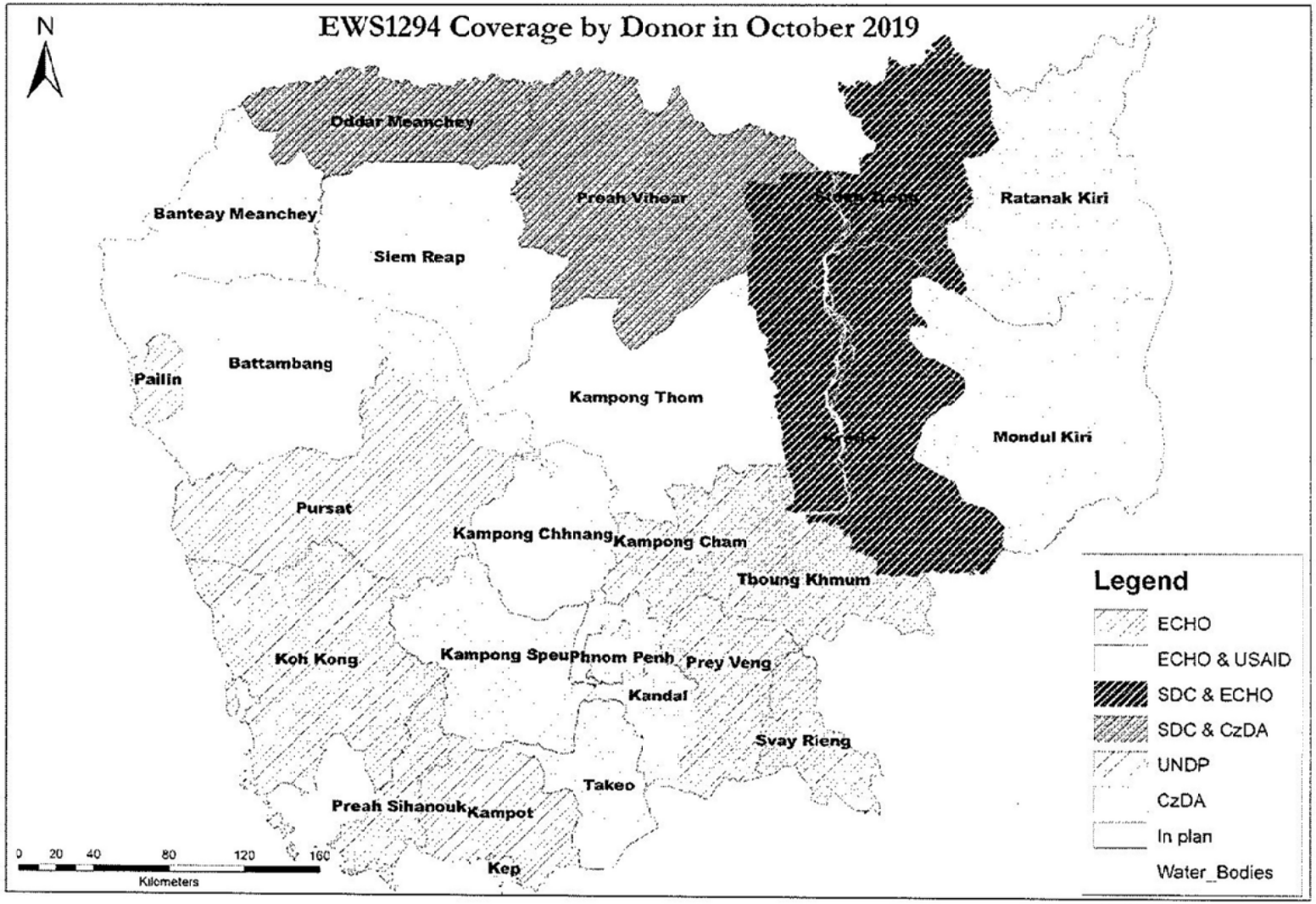
Barreras Federico, Disaster Management Program Manager

CZECH REPUBLIC
HUMANITARIAN AID

PEOPLE IN NEED
CZECH REPUBLIC

Alliance 2015

UNDP
Empowered lives.
Resilient nations.


EWS1294 Coverage by Donor in October 2019
N
Oddar Meanchey
Preah Vihear
Stung Treng
Ratanak Kiri
Banteay Meanchey
Siem Reap
Battambang
Pailin
Kampong Thom
Kratie
Mondul Kiri
Pursat
Kampong Chhnang
Kampong Cham
Tboung Khmum
Koh Kong
Kampong Speu
Phnom Penh
Prey Veng
Kandal
Svay Rieng
Takeo
Preah Sihanouk
Kampot
Kep
0 20 40 80 120 160
Kilometers
Legend
ECHO
ECHO & USAID
SDC & ECHO
SDC & CzDA
UNDP
CzDA
In plan
Water_Bodies

National coverage by the end of 2020

Empowered lives.
Resilient nations.

- ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ នឹងពង្រីកទៅ ខេត្តកណ្តាល រាជធានីភ្នំពេញ និងខេត្តតាកែវ និងសន្និសីទថ្នាក់តំបន់ (UNDP)។
- EWS 1294 expand to Kandal, Phnom Penh and Takeo and regional conference (UNDP).

WFP World Food Programme

- ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ នឹងពង្រីកទៅ ខេត្តកំពង់ស្ពឺ ព្រមទាំងមានការពង្រឹងដល់ ខេត្តកំពង់ឆ្នាំង និងពោធិសាត់ កំពង់ធំ (OFDA និង WFP) ។
- EWS 1294 expand to Kampong Speu including strengthening to Kampong Chhnang, Pursath and Kampong Thom (OFDA and WFP).

Dissemination through social media Facebook

facebook

- ដោយសារតែការលេចចេញនូវបណ្តាញទំនាក់ទំនងសង្គមនៅក្នុងប្រទេសកម្ពុជា មានផែនការធ្វើការជាមួយផ្សព្វផ្សាយតាមហ្វេសប៊ុក។
- Due to the big arise of social media in Cambodia, plan to work on including Facebook dissemination.

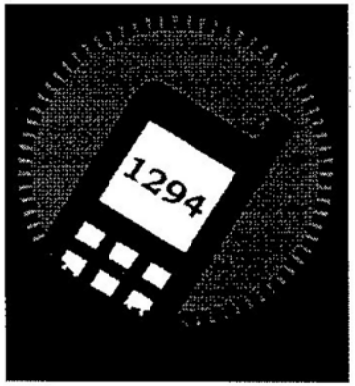
Hand over to NCDM of EWS 1294

- គម្រោងនេះនឹងចាប់ផ្តើមនៅឆ្នាំ ២០២០។
- To start in 2020.
- បណ្តុះបណ្តាលដល់ **គ.ជ.គ.ម**.។
- Training to NCDM.
- **គ.ជ.គ.ម**. អាចនឹងគ្រប់គ្រង ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ ដោយខ្លួនឯងនាពេលអនាគត។
- NCDM can manage EWS1294 on their own in the future.

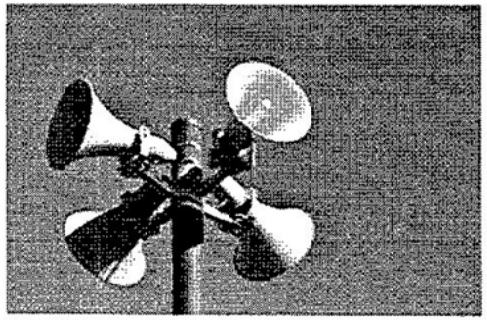
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

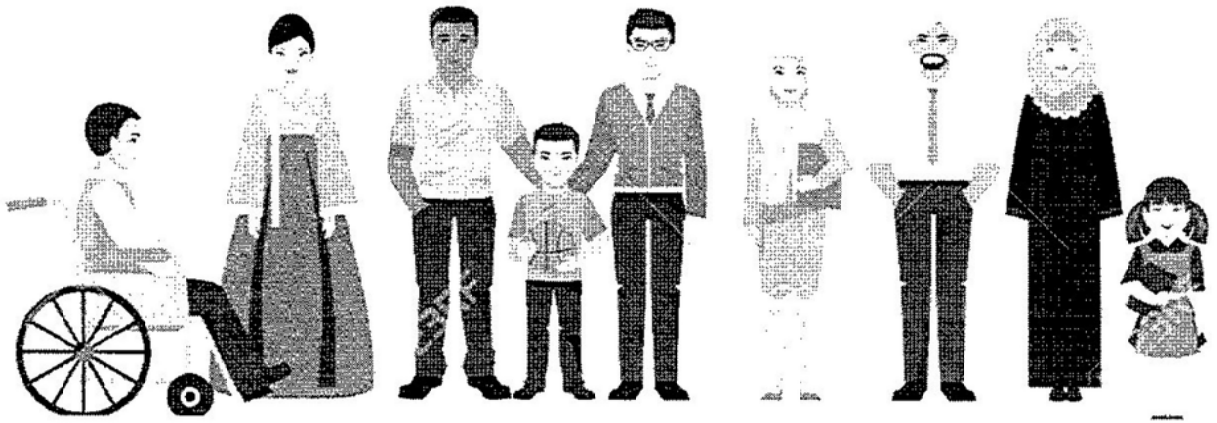
Swiss Agency for Development and Cooperation SDC

Making sure every house hold in an affected area access to warning call



- រាល់ការខិតខំរបស់យើងដើម្បីធ្វើឲ្យប្រាកដថារាល់ផ្ទះប្រជាជនដែលស្ថិតនៅក្នុងតំបន់ដែលរងផលប៉ះពាល់នឹងទទួលបានសារប្រកាសឲ្យដឹងមុន នាពេលអនាគត។
- All our efforts toward making sure every house hold in an affected area receives a warning call in the future





Funded by
European Union
Humanitarian Aid

Empowered lives.
Resilient nations.

CZECH REPUBLIC
HUMANITARIAN AID

CZECH REPUBLIC
DEVELOPMENT COOPERATION

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

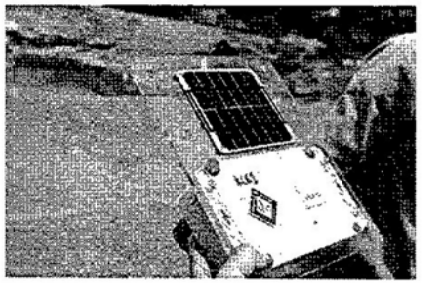
metfone
mitinitanig closer

ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤

Early Warning System (EWS) 1294

សំ ភៅ ប្រធានស្តីទីនាយកដ្ឋានព័ត៌មាន និងទំនាក់ទំនង
Sam Peou

ប្រវត្តិ ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ History of EWS 1294



2013 2014 2015 2016 2017 2018 2019

Pilot in 4 villages in Pursat

3 Pursat, Bantheay Meanchey & Kg. Thom

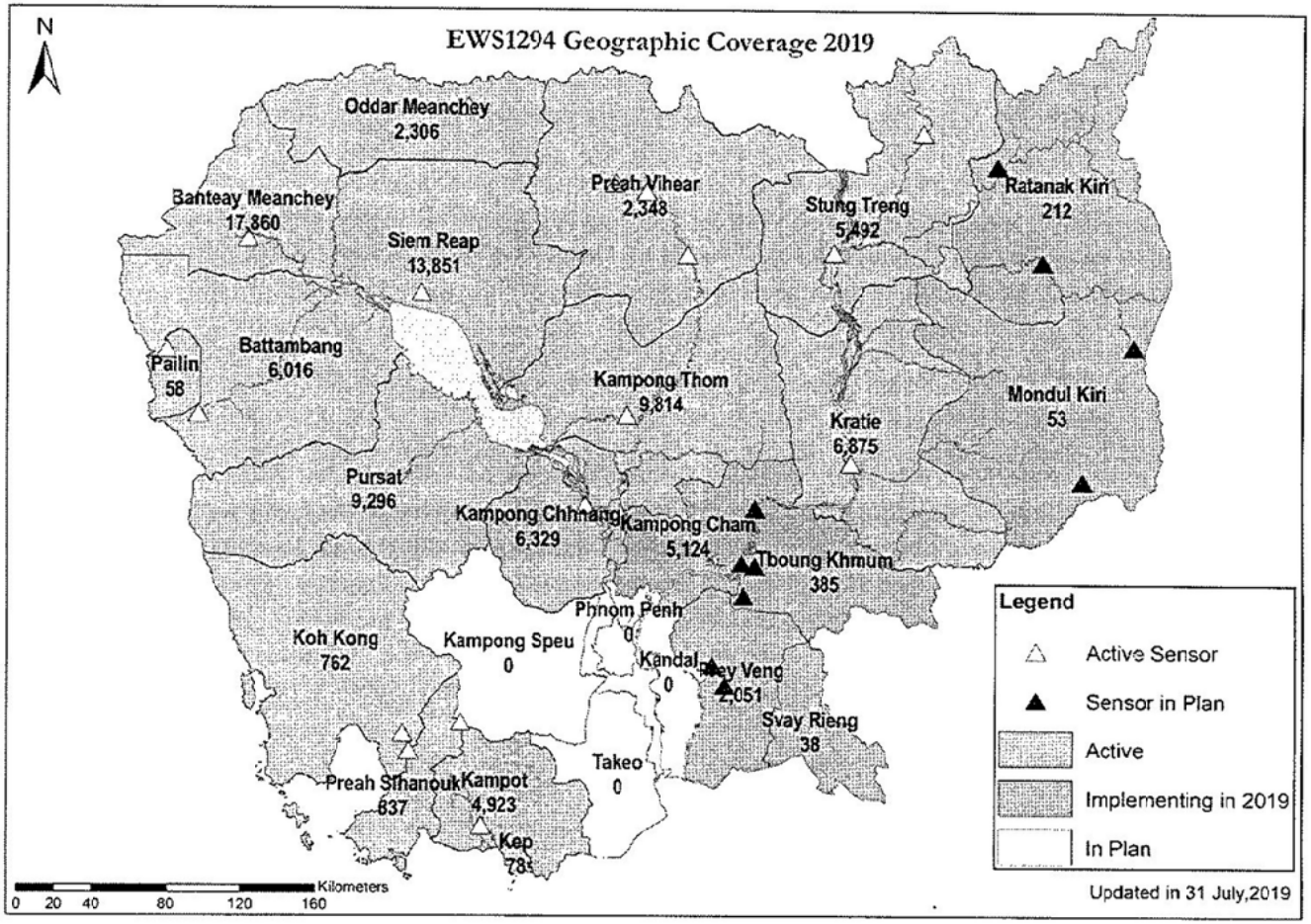
4 Battabang Kg. Chhnang Siem Reap & Kampot

4 Kratie Stung Treng Oddarmeanchey & Preah Vihear

4 Sihanouk, Kep Koh Kong and Pailin

6 Kg. Cham Tboung Khmum Prey Veng Svay Rieng Rattanakiri and Modulkiri

ស្ថានភាព ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ Status of EWS 1294



តួនាទី និងការទទួលខុសត្រូវរបស់ គ.ជ.គ.ម.

Role and responsibility of NCDM

1. **គ.ជ.គ.ម**. ផ្តល់ការដឹកនាំ គោលការណ៍ណែនាំ និងសេចក្តីណែនាំ ដល់គណៈកម្មាធិការគ្រប់គ្រងគ្រោះមហន្តរាយថ្នាក់ក្រោមជាតិ។
2. **គ.ជ.គ.ម**. ចាត់តាំងមន្ត្រីបង្គោលរបស់ **គ.ជ.គ.ម**. ដើម្បីសម្របសម្រួល កិច្ចការរដ្ឋបាល ការទំនាក់ទំនង។
3. **គ.ជ.គ.ម**. ចាត់តាំងធនធានមនុស្សរបស់ខ្លួន និងពីនាយកដ្ឋានពាក់ព័ន្ធនានារបស់ **គ.ជ.គ.ម**. ដើម្បីធ្វើការជាមួយធនធានមនុស្សមកពីអង្គការភីន។
4. **គ.ជ.គ.ម**. ផ្តល់ការសម្របសម្រួល និងជួយសំរួលដល់អង្គការភីន។
5. **គ.ជ.គ.ម**. ជួយបន្តគាំទ្រដល់ការអនុវត្តន៍ប្រព័ន្ធប្រកាសឲ្យដឹងមុនតាមទូរស័ព្ទដៃ (លេខ១២៩៤)។
6. **គ.ជ.គ.ម**. សម្របសម្រួល និងចែករំលែកព័ត៌មាន អំពីសកម្មភាព ដែលបានអនុវត្តក្រោមគម្រោងនេះជាមួយស្ថាប័នរដ្ឋាភិបាល ភាគីពាក់ព័ន្ធ ក្នុងការងារកាត់បន្ថយហានិភ័យគ្រោះមហន្តរាយ និងទីភ្នាក់ងារផ្តល់ជំនួយ។

តួនាទី និងការទទួលខុសត្រូវរបស់ គ.ជ.គ.ម.

Role and responsibility of NCDM (Cont.)

7. **គ.ជ.គ.ម**. នឹងចូលរួមចរិកាប្រចាំឆ្នាំ សម្រាប់ប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ ដើម្បីបង្ហាញពីការ ប្តេជ្ញាចិត្តរបស់ **គ.ជ.គ.ម**. ក្នុងការដាក់បញ្ចូលប្រព័ន្ធមួយនេះទៅក្នុងប្រតិបត្តិការរយៈពេលវែងនៅឆ្នាំ ២០២១។

8. **គ.ជ.គ.ម**. ធ្វើការសម្របសម្រួល និងសហការជាមួយក្រសួងធនធានទឹក និងឧតុនិយម ក្នុងការដំណើរការ និងថែទាំប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤។

9. **គ.ជ.គ.ម**. ធ្វើការសម្របសម្រួលជាមួយអង្គការភីន ដើម្បីចែករំលែកព័ត៌មាន ទាក់ទងនឹងប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤ តាមរយៈកិច្ចសិក្សា និងកិច្ចសហប្រតិបត្តិការជាមួយស្ថាប័នរដ្ឋាភិបាល អ្នកពាក់ព័ន្ធការកាត់បន្ថយហានិភ័យ និងភ្នាក់ងារផ្តល់មូលនិធិ។

10. **គ.ជ.គ.ម**. គាំទ្រអង្គការភីន ក្នុងការបណ្តុះបណ្តាល និងលើកកម្ពស់យុទ្ធនាការប្រព័ន្ធប្រកាសឲ្យដឹងមុន ទៅដល់ គណៈកម្មាធិការគ្រប់គ្រងគ្រោះមហន្តរាយថ្នាក់ក្រោមជាតិ និងសិស្សសាលាអំពីរបៀបចុះឈ្មោះចូលទៅក្នុងប្រព័ន្ធប្រកាសឲ្យដឹងមុន ១២៩៤។


UNDP
Empowered lives.
Resilient nations.


PEOPLE IN NEED


CZECH REPUBLIC
HUMANITARIAN AID

អរគុណ


metfone
កាន់តែជិតស្និទ្ធ closer


Smart

Community Mobilization and Environmental improvements (CMEI)
Output # 03 of Integrated Urban Environmental Management in Tonle Sap Basin

Consent form for Communications Information gathering

ទម្រង់បែបបទយល់ព្រមសម្រាប់ថតរូប វីដេអូ និងសម្ភាសន៍

ខ្ញុំ .....

និងគ្រួសាររបស់ខ្ញុំបានផ្តល់ការយល់ព្រមរបស់យើងដើម្បីឱ្យមានការសម្ភាសនិងថតរូបដោយគម្រោង CMEI ។ **ខ្ញុំដឹងយ៉ាងច្បាស់ពីការពិតដែលថារូបថត / វីដេអូនិងរឿងរបស់ខ្ញុំអាចត្រូវបានប្រើសម្រាប់ការផ្សព្វផ្សាយជាសាធារណៈរបស់គម្រោង** CMEI ។

ឈ្មោះនិងហត្ថលេខារបស់បុគ្គលដែលផ្តល់ការយល់ព្រម

.....

សាច់ញាតិ (ប្រសិនបើកុមារអាយុក្រោម ១៨ ឆ្នាំ)

.....

ឈ្មោះនិងហត្ថលេខារបស់អ្នកសំភាសន៍ / អ្នកថតរូប

.....

Consent form for photo, video and interview

I .....and my family have given our consent to be interviewed and photographed by CMEI Project. I am clearly aware of the fact that my photos/ videos and story, could be used for publicity of CMEI's work.

Name and Signature of the person giving consent: .....

Relation (if children below 18 years): .....

Name and signature of the Interviewer/Photographer: .....

Consent form for photo, video and interview

I ……

and my family have given our consent to be interviewed and photographed by CMEI Project. I am clearly aware of the fact that my photos/ videos and story, could be used for publicity of CMEI's work.

Name and Signature of the person giving consent

……

Relation (if children below 18 years)

……

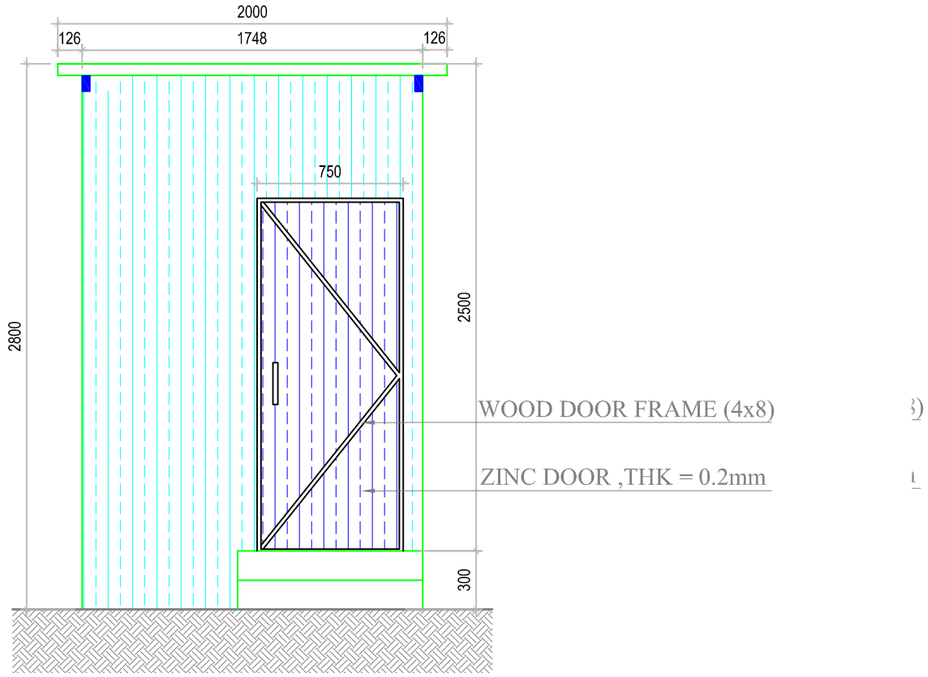
Name and signature of the Interviewer/Photographer

……

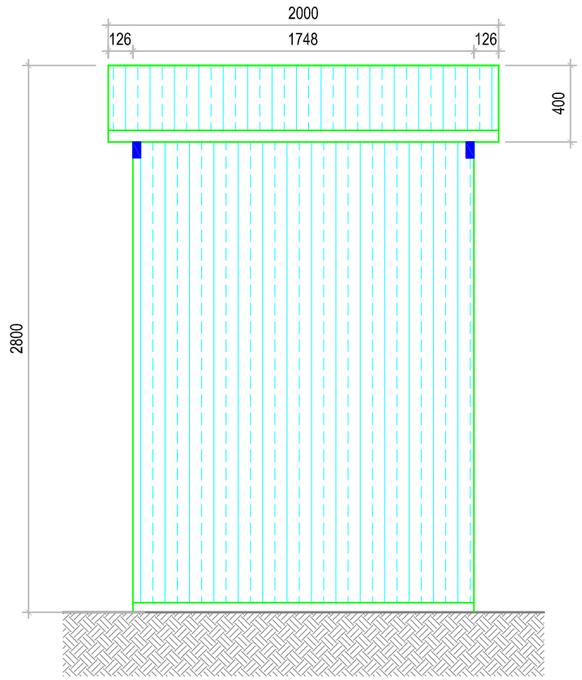
Annex-11-Revised-Design-18Nov2019

TYPICAL LATRINE

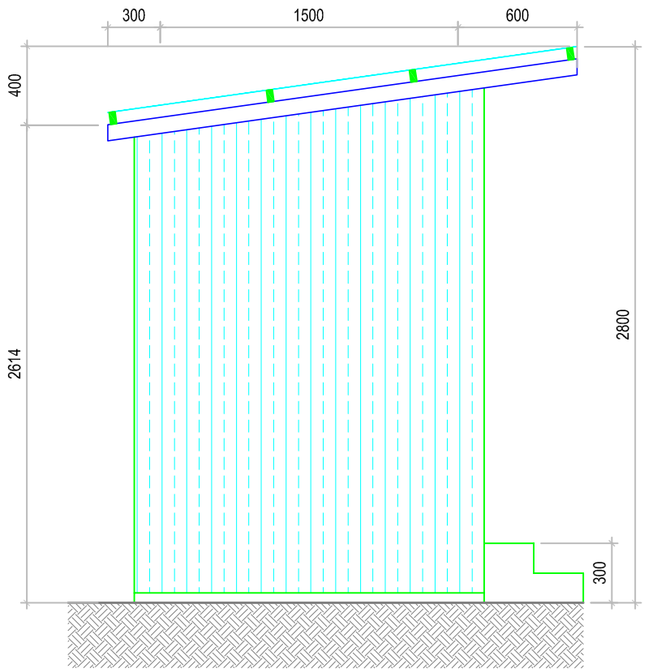
PARTNERSHIP FOR DEVELOPMENT IN KAMPUCHEA (PADEK) *IN ASSOCIATION WITH WEST EAST DEVELOPMENT CAMBODIA CO.,LTD.(WEDC)*	*KINGDOM OF CAMBODIA* *MINISTRY OF PUBLIC WORK AND TRANSPORT*	*SUBMITTED BY:* *SUBMITTED BY:* *DATE:*	*REV.*	*DESCRIPTION*	*DATE*	*PROJECT:* *Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)* *DRAWING TITLE:*	*SCALE:* *AS SHOWN* *DRAWING NO.*
			1				
			2				
			3				
			4				
			5				



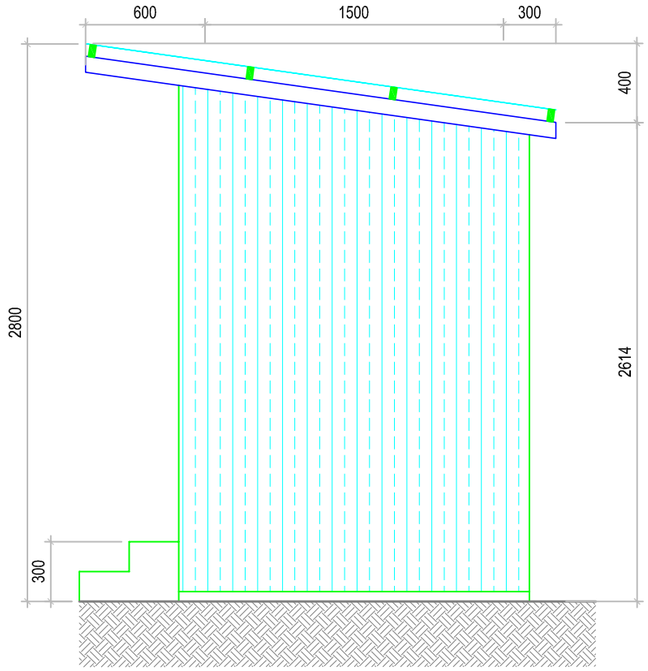
FRONT PLAN VIEW



BACK PLAN VIEW



RIGHT PLAN VIEW



LEFT PLAN VIEW

PARTNERSHIP FOR DEVELOPMENT IN KAMPUCHEA (PADEK)
IN ASSOCIATION WITH WEST EAST DEVELOPMENT CAMBODIA CO.,LTD.(WEDC)

KINGDOM OF CAMBODIA

MINISTRY OF PUBLIC WORK AND TRANSPORT

SUBMITTED BY:

SUBMITTED BY:

DATE:

REV.	*DESCRIPTION*	*DATE*
1		
2		
3		
4		
5		

PROJECT: *Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)*

SCALE: *AS SHOWN*

DRAWING TITLE:

DRAWING NO.

ENGINEER COST ESTIMATION

N.O	DESCRIPTION	UNIT	QUANTITY	UNIT COST(USD)	TOTAL COST (USD)
1	SUPPLY RING CONCRETE	NUMBER	3	9	27
2	SUPPLY COVER RING CONCRETE	NUMBER	1	6	6
3	SUPPLY DEFORM BAR(SD10)	KG	20	0.9	18
4	SUPPLY WIRE CONNECTION	KG	2	1.2	2.4
5	SUPPLY CEMENT	PACKAGE	12	6	72
6	SUPPLY HOLLOW BRICK	NUMBER	1300	0.065	84.5
7	SUPPLY RIVER SAND	M3	3.11	10	31.1
8	SUPPLY AGGREGATE 1X2	M3	0.68	25	17
9	SUPPLY WALL TILE (300X600)	BOX	2	7	14
10	SUPPLY FLOOR TILE (300X300)	BOX	2	6	12
11	SUPPLY TOILET PEN	NUMBER	1	12	12
12	SUPPLY WOOD COLUMN (D:0.1M,L:5.0M)	NUMBER	4	13	52
13	SUPPLY WOOD RAFTER, PURLIN (4X8)	NUMBER	14	3	42
14	SUPPLY ZINC ROOF, WALL (TH:2.5C)	M2	30	3	90
15	SUPPLY NAIL	KG	2	1	2
16	SUPPLY SCREW FOR ZINC	KG	2	2	4
17	SUPPLY BLUE PVC 21MM, TH:8.5	M	4	1	4
18	SUPPLY BLUE PVC 27MM,TH:8.5	M	4	1.5	6
19	SUPPLY BLUE PVC 100MM,TH:8.5	M	4	4.5	18
20	SUPPLY FLOOR DRAINAGE 34	NUMBER	1	2.5	2.5
21	SUPPLY BLUE PVC S CONNECTION	NUMBER	1	10	10
22	SUPPLY HINGE DOOR	NUMBER	3	0.5	1.5

TOTAL COST=527.93USD

PARTNERSHIP FOR DEVELOPMENT IN KAMPUCHEA (PADEK)
IN ASSOCIATION WITH WEST EAST DEVELOPMENT
CAMBODIA CO.,LTD.(WEDC)

KINGDOM OF CAMBODIA

MINISTRY OF PUBLIC WORK AND TRANSPORT

SUBMITTED BY:

SUBMITTED BY:

DATE:

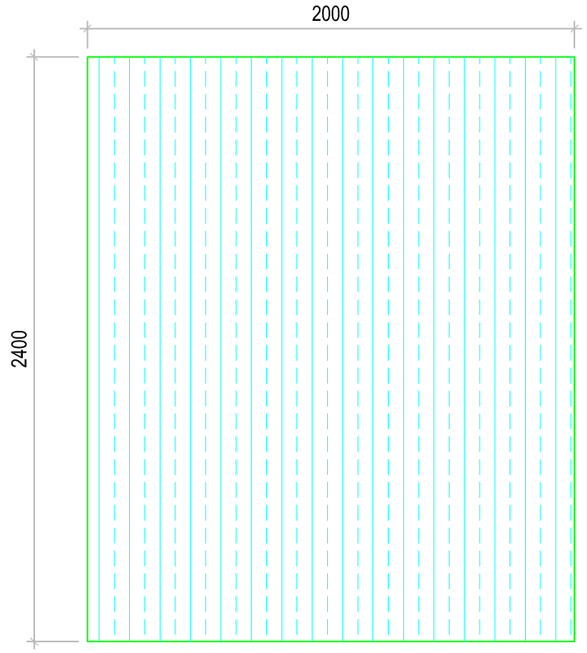
REV.	*DESCRIPTION*	*DATE*
1		
2		
3		
4		
5		

PROJECT: *Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)*

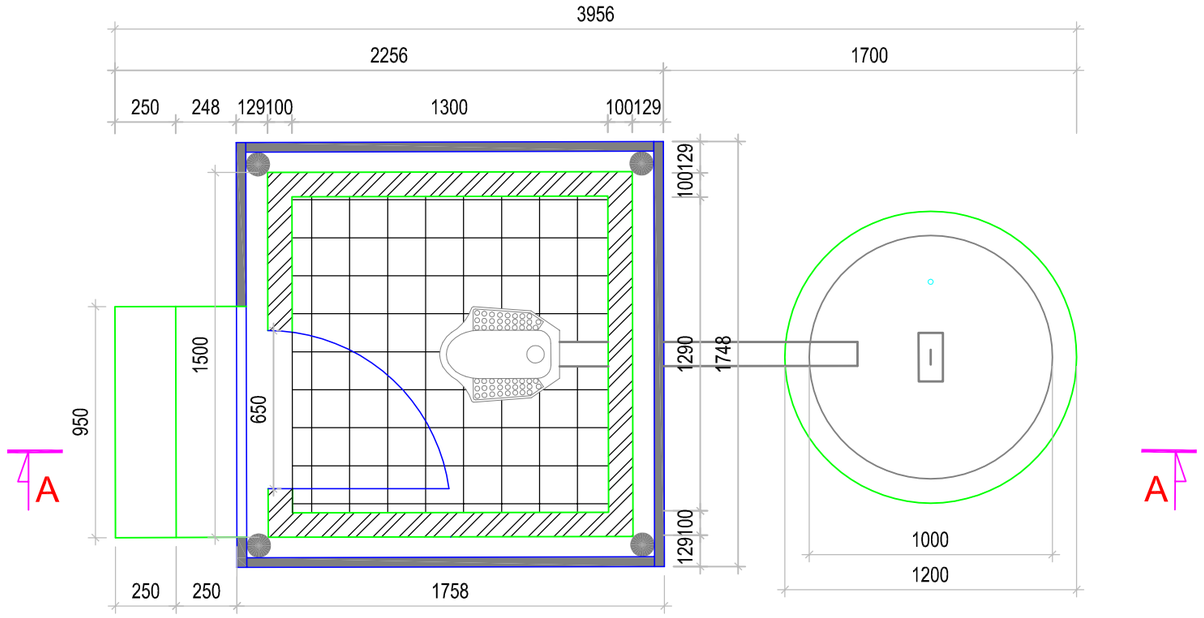
SCALE: *AS SHOWN*

DRAWING TITLE:

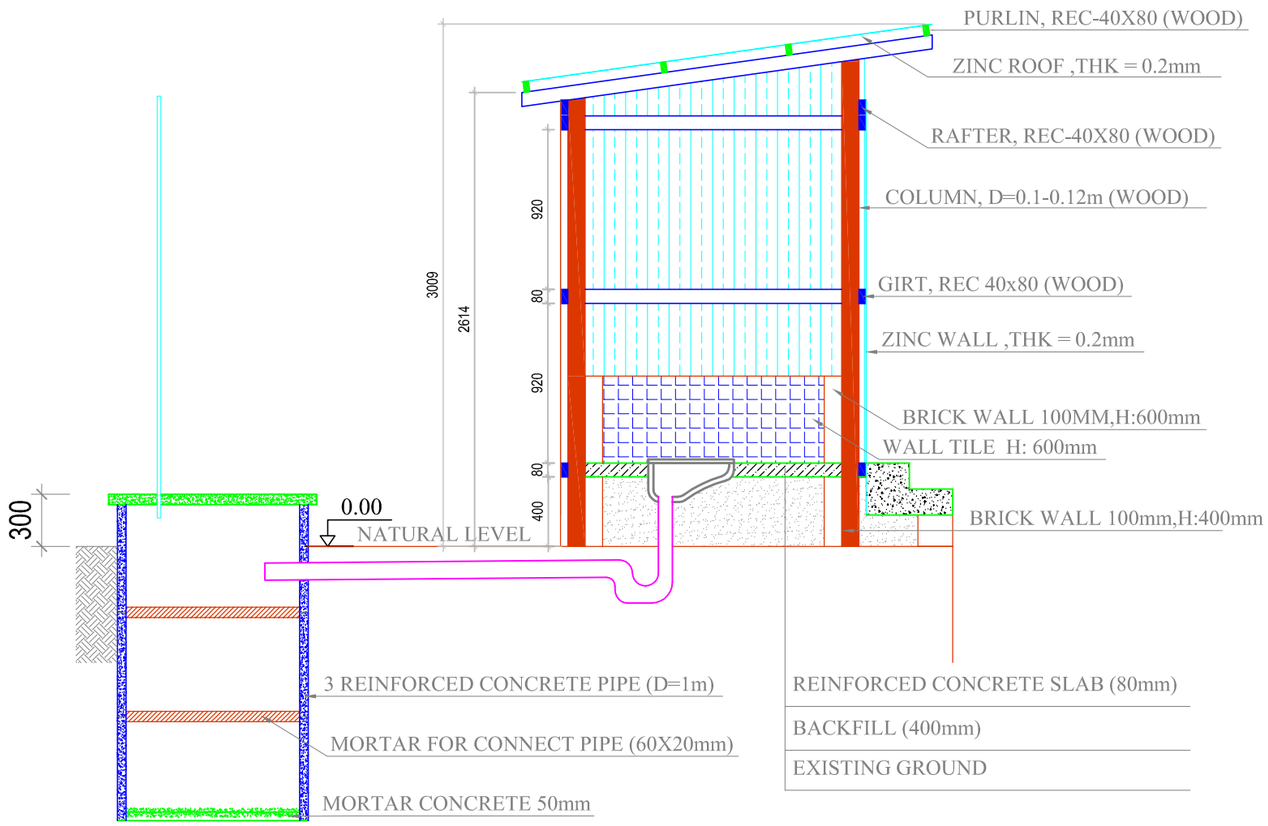
DRAWING NO.



ROOF PLAN VIEW



PLAN VIEW



SECTION A-A PLAN VIEW

NOTES:

1- LOCATION OF SEPTIC TANK SHALL BE ADJUSTED BASED ON ACTUAL SITE CONDITION

2- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED

3- CONCRETE CLASS SHALL BE
LEAN CONCRETE 15MPa
STRUCTURE PART 25MPa

4- CLEAR COVER TO REINFORCEMENT SHALL BE CAST AGAINST GROUND 50mm AND AIR FACE 25mm

5- ALL REINFORCEMENT TO BE HOT ROLLED GRADE 400 DEFORMED BAR TO AASHTO M31-M-86

6- MINIMUM REINFORCEMENT LAP TO BE 30 BAR DIAMETERS

7- LOCATION OF LAP TO BE APPROVED BY ENGINEER.

PARTNERSHIP FOR DEVELOPMENT IN KAMPUCHEA (PADEK)
IN ASSOCIATION WITH WEST EAST DEVELOPMENT CAMBODIA CO.,LTD.(WEDC)

KINGDOM OF CAMBODIA

MINISTRY OF PUBLIC WORK AND TRANSPORT

SUBMITTED BY:	*REV.*	*DESCRIPTION*	*DATE*	*PROJECT:* Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)	*SCALE:* AS SHOWN
SUBMITTED BY:	*1*				
	2				
	3			*DRAWING TITLE:*	*DRAWING NO.*
DATE:	*4*				
	5				

MATERIAL LIST

N.O	DESCRIPTION	UNIT	QUANTITY
1	SUPPLY RING CONCRETE	NUMBER	3
2	SUPPLY COVER RING CONCRETE	NUMBER	1
3	SUPPLY DEFORM BAR(SD10)	KG	20
4	SUPPLY WIRE CONNECTION	KG	2
5	SUPPLY CEMENT	PACKAGE	12
6	SUPPLY HOLLOW BRICK	NUMBER	1300
7	SUPPLY RIVER SAND	M3	3.11
8	SUPPLY AGGREGATE 1X2	M3	0.68
9	SUPPLY WALL TILE (300X600)	BOX	2
10	SUPPLY FLOOR TILE (300X300)	BOX	2
11	SUPPLY TOILET PEN	NUMBER	1
12	SUPPLY WOOD COLUMN (D:0.1M,L:5.0M)	NUMBER	4
13	SUPPLY WOOD RAFTER, PURLIN (4X8)	NUMBER	14
14	SUPPLY ZINC ROOF, WALL (TH:2.5C)	M2	30
15	SUPPLY NAIL	KG	2
16	SUPPLY SCREW FOR ZINC	KG	4
17	SUPPLY BLUE PVC 21MM, TH:8.5	M	4
18	SUPPLY BLUE PVC 27MM,TH:8.5	M	4
19	SUPPLY BLUE PVC 100MM,TH:8.5	M	4
20	SUPPLY FLOOR DRAINAGE 34	NUMBER	1
21	SUPPLY BLUE PVC S CONNECTION	NUMBER	1
22	SUPPLY HINGE DOOR	NUMBER	4

PARTNERSHIP FOR DEVELOPMENT IN KAMPUCHEA (PADEK)
IN ASSOCIATION WITH WEST EAST DEVELOPMENT
CAMBODIA CO.,LTD.(WEDC)

KINGDOM OF CAMBODIA

MINISTRY OF PUBLIC WORK AND TRANSPORT

SUBMITTED BY:

SUBMITTED BY:

DATE:

REV.	*DESCRIPTION*	*DATE*
1		
2		
3		
4		
5		

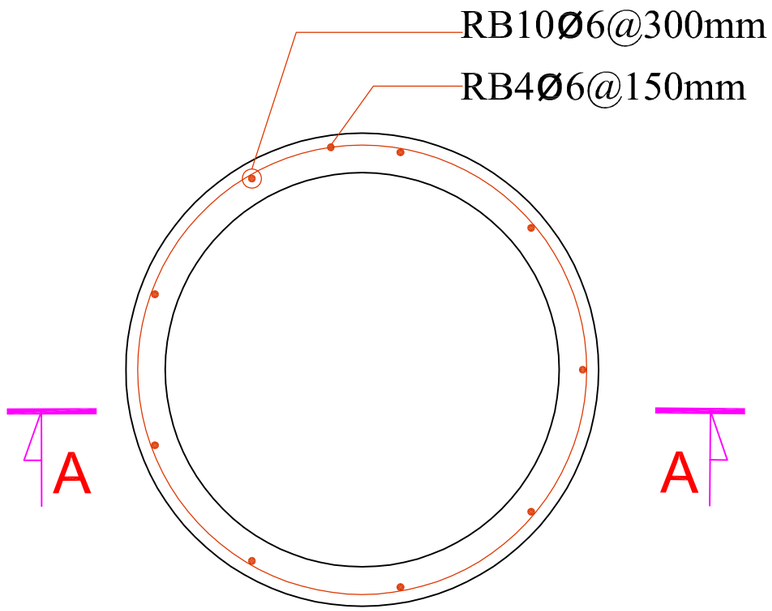
PROJECT: *Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)*

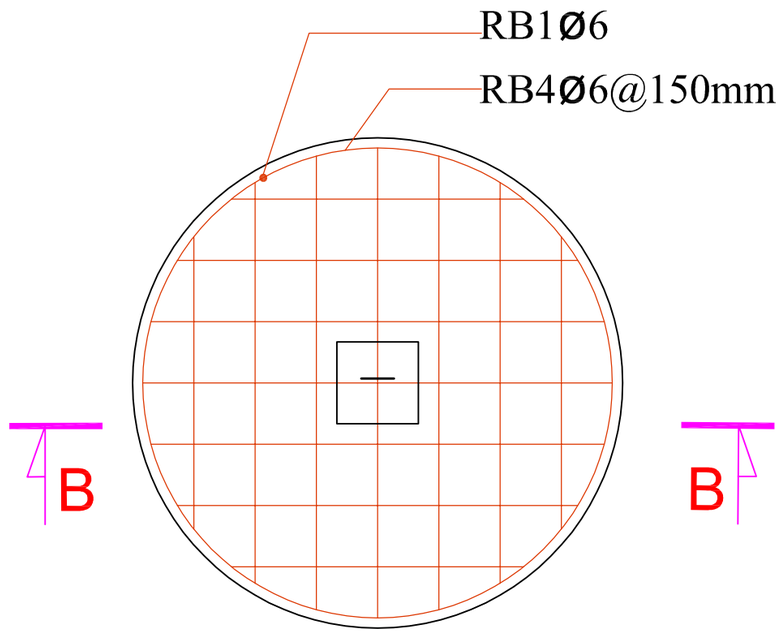
SCALE: *AS SHOWN*

DRAWING TITLE:

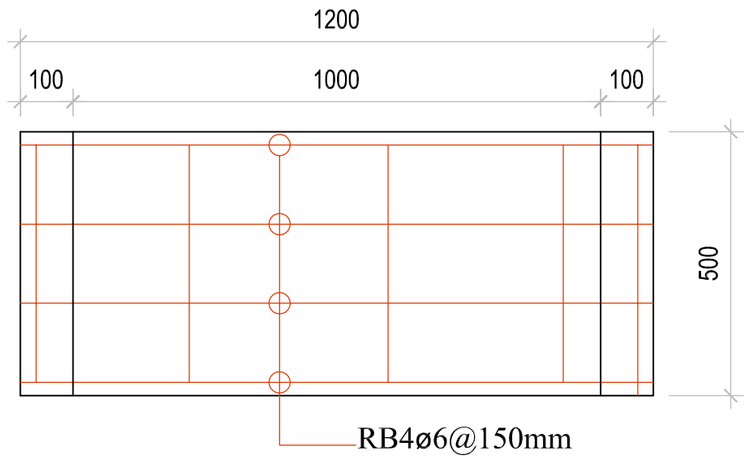
DRAWING NO.

DETAIL REINFORCEMENT FOR RC PIPE AND COVER

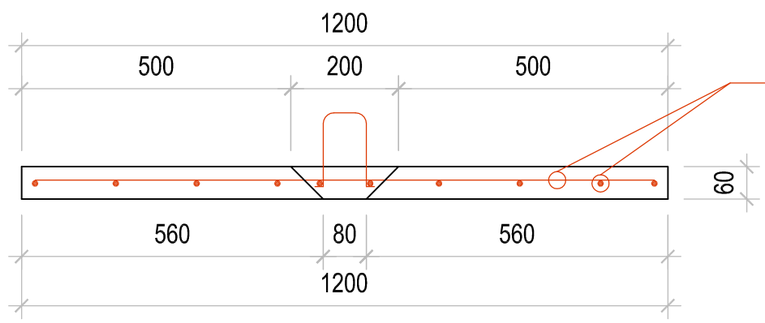




CONCRETE RING

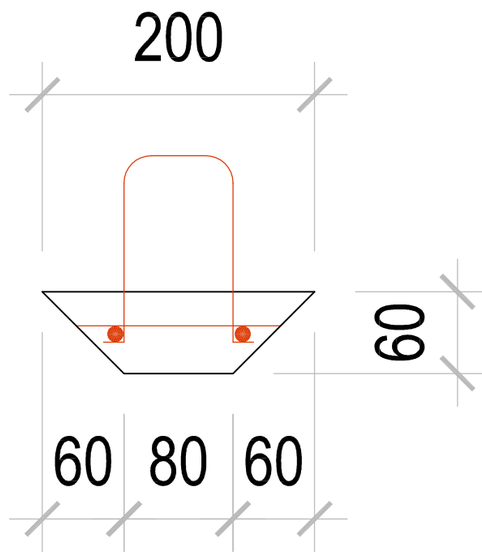


SECTION A-A PLAN VIEW



SECTION B-B PLAN VIEW

CONCRETE COVER



PARTNERSHIP FOR DEVELOPMENT IN KAMPUCHEA (PADEK) IN ASSOCIATION WITH WEST EAST DEVELOPMENT CAMBODIA CO.,LTD.(WEDC)	*KINGDOM OF CAMBODIA* *MINISTRY OF PUBLIC WORK AND TRANSPORT*	*SUBMITTED BY:* *SUBMITTED BY:* *DATE:*	*REV.* / *DESCRIPTION* / *DATE*: 1, 2, 3, 4, 5	*PROJECT:* Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF) *DRAWING TITLE:*	*SCALE:* AS SHOWN *DRAWING NO.*

BIDING QUOTATION

N.O	DESCRIPTION	UNIT	QUANTITY	UNIT COST(USD)	TOTAL COST (USD)
1	SUPPLY RING CONCRETE	NUMBER	3		
2	SUPPLY COVER RING CONCRETE	NUMBER	1		
3	SUPPLY DEFORM BAR(SD10)	KG	20		
4	SUPPLY WIRE CONNECTION	KG	2		
5	SUPPLY CEMENT	PACKAGE	12		
6	SUPPLY HOLLOW BRICK	NUMBER	1300		
7	SUPPLY RIVER SAND	M3	3.11		
8	SUPPLY AGGREGATE 1X2	M3	0.68		
9	SUPPLY WALL TILE (300X600)	BOX	2		
10	SUPPLY FLOOR TILE (300X300)	BOX	2		
11	SUPPLY TOILET PEN	NUMBER	1		
12	SUPPLY WOOD COLUMN (D:0.1M,L:5.0M)	NUMBER	4		
13	SUPPLY WOOD RAFTER, PURLIN (4X8)	NUMBER	14		
14	SUPPLY ZINC ROOF, WALL (TH:2.5C)	M2	30		
15	SUPPLY NAIL	KG	2		
16	SUPPLY SCREW FOR ZINC	KG	2		
17	SUPPLY BLUE PVC 21MM, TH:8.5	M	4		
18	SUPPLY BLUE PVC 27MM,TH:8.5	M	4		
19	SUPPLY BLUE PVC 100MM,TH:8.5	M	4		
20	SUPPLY FLOOR DRAINAGE 34	NUMBER	1		
21	SUPPLY BLUE PVC S CONNECTION	NUMBER	1		
22	SUPPLY HINGE DOOR	NUMBER	3		

TOTAL COST=

PARTNERSHIP FOR DEVELOPMENT IN KAMPUCHEA (PADEK)
IN ASSOCIATION WITH WEST EAST DEVELOPMENT
CAMBODIA CO.,LTD.(WEDC)

KINGDOM OF CAMBODIA

MINISTRY OF PUBLIC WORK AND TRANSPORT

SUBMITTED BY:

SUBMITTED BY:

DATE:

REV.	*DESCRIPTION*	*DATE*
1		
2		
3		
4		
5		

PROJECT: *Integrated Urban Environment Management in the Tonle Sap Basin Project*
ADB Grant: 0454-CAM(SCF)

SCALE: *AS SHOWN*

DRAWING TITLE:

DRAWING NO.

BOQ and Cost Estimation Toilet to Building at Pursat Province									
TOILET CONSTRUCTION BY WOOD AND CONCRETE: 1.5Mx1.5M									
No.	DESCRIPTION WORK	UNIT	QUANTITY	UNIT PRICE ($)	TOTAL ($)	Number of toilet	Total Quantity	TOTAL ($)	
1	ផ្គត់ផ្គង់លូកងរ/ Supply ring concrete (Diameter = 1m)	Number	3.00	9.00	27.00	1	3.00	$	27.00
2	ផ្គត់ផ្គង់គំរបលូមូល/Supply cover ring concrete(Diameter:1.0m)	Number	1.00	6.00	6.00	1	1.00	$	6.00
3	ផ្គត់ផ្គង់ដែកថ្នាំងអំពៅ/ Supply deform bar (SD10)	KG	20.00	0.90	18.00	1	20.00	$	18.00
4	ផ្គត់ផ្គង់លួសចំណង/ Suplly Wire connection	KG	2.00	1.20	2.40	1	2.00	$	2.40
5	ផ្គត់ផ្គង់ស៊ីម៉ង់/ Supply cement	Package	12.00	6.00	72.00	1	12.00	$	72.00
6	ផ្គត់ផ្គង់ឥដ្ឋប្រហោង/ Supply Hollow brick	Number	1,300.00	0.07	84.50	1	1,300.00	$	84.50
7	ផ្គត់ផ្គង់ខ្សាច់/ Supply river sand	M3	3.11	10.00	31.13	1	3.11	$	31.13
8	ផ្គត់ផ្គង់ថ្មចាក់បេតុង/ Supply Aggregate 1x2	M3	0.68	25.00	16.90	1	0.68	$	16.90
9	ផ្គត់ផ្គង់ការ៉ូដញ្ជាំង/ Supply Wall Tile (30x60)	Box	2.00	7.00	14.00	1	2.00	$	14.00
10	ផ្គត់ផ្គង់ការ៉ូបាត/ Supply Floor Tile (30x30)	Box	2.00	6.00	12.00	1	2.00	$	12.00
11	ផ្គត់ផ្គង់ចានបង្គន់/ Supply toilet pen	Number	1.00	12.00	12.00	1	1.00	$	12.00
12	ផ្គត់ផ្គង់សសរមូល/ Supply wood column (Diameter = 0.1m, Length = 5m)	Number	4.00	13.00	52.00	1	4.00	$	52.00
13	ផ្គត់ផ្គង់ឈើ៤គុណ៨/ Supply wood rafter, purlin (Width = 0.04m, High = 0.08m, Length = 4m)	Number	14.00	3.00	42.00	1	14.00	$	42.00
14	ផ្គត់ផ្គង់ស័ង្កសី/ Supply zinc for wall and roof (Thickness = 0.25mm)	M2	30.00	3.00	90.00	1	30.00	$	90.00
15	ផ្គត់ផ្គង់ដែកគោល/ Supply nail	KG	2.00	1.00	2.00	1	2.00	$	2.00
16	ផ្គត់ផ្គង់វីសជាញ់ស័ង្កសី/ Supply screw for zinc	KG	4.00	1.00	4.00	1	4.00	$	4.00
17	ផ្គត់ទុយោភីវីស៊ី ២១/ Supply blue PVC PIPE (Diameter = 21mm,th:8.5mm, Length = 4m)	M	4.00	1.00	4.00	1	4.00	$	4.00
18	ផ្គត់ទុយោភីវីស៊ី ២៧/Supply blue PVC PIPE (Diameter :27mm,th:8.5, Length:4.0m)	M	4.00	1.50	6.00	1	4.00	$	6.00
19	ស៊ីហ្វុងពាង៤/Supply floor drainer 34	Number	1.00	2.50	2.50	1	1.00	$	2.50
20	ផ្គត់ត្រចៀកទ្វារ/ Supply Hinge Door	Number	3.00	0.50	1.50	1	3.00	$	1.50
21	ផ្គត់ទុយោភីវីស៊ី ១០០/ Supply PVC PIPE (Diameter:100mm,th:13.5mm, Length:4.0m)	M	4.00	4.50	18.00	1	4.00	$	18.00
22	ផ្គត់តំណរដីមី១០០/ Supply Blue PVC for connect (Diameter:100mm, Angle 45dergree)	Number	1.00	3.00	3.00	1	1.00	$	3.00
23	កម្លៃពលកម្ម/ Labor construction toilet	SET							
(06 Oct 2019) SUB-TOTAL BUDGET								$	520.93

TECHNICAL SPECIFICATION

Table of Contents

SPECIFICATIONS & PERFORMANCE REQUIREMENTS

1) GENERAL

The Works specified in this Section include the supply, installation, and construction of all items concerning the construction of the all components of household latrines. The Contractor shall perform the works carefully and adequately, providing his own staff, labor force, and the necessary equipment and materials. The Works shall be performed in accordance with these technical specifications, the drawings, other relevant Project Document, and all others norm and regulations in force in the Kingdom of Cambodia.

The term "Project Manager" or the "Engineer" used in this document may also be any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager), who is responsible for supervising the execution of the Works and administering the Contract.

For the household latrines, the Contractor may use locally available construction materials and technologies for the construction of pour-flush household latrines as detailed in the Drawing.

All materials to be incorporated into the Works shall be new or approved by Engineer. Materials shall be transported, stored and stacked according to the manufacturer's instructions and requirements. Materials and products with defects shall be rejected from the site and replaced at the Contractor's cost, if required so by the Engineer.

As soon as reasonable after the Contract has been awarded, the Contractor shall submit to the Engineer for his approval list of proposed suppliers, sources of the materials and technical information concerning the materials to be used for execution of the works. The Engineer may require additional information (certificates, test reports, installation manuals etc.) and shall give his decision no later than two weeks after receiving all necessary information, concerning suppliers and materials.

No material shall be obtained and used in works before its approval by the engineer. Approval shall be obtained sufficiently in advance to avoid delay in field works;

For the purpose of this contract**,** the technical designs and work specifications will be as follows:

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
1. Work Program	• The contractor shall communicate with the Project Manager, respective village chiefs and relevant beneficiary household regarding the work program for the construction of the latrines. • These parties for the construction of latrines will jointly agree the work program and the work program shall also include the agreed list of the names of the beneficiary households. • The work program shall submit the work program for approval from the Project Manager and the Employer prior to the commencement of works. • The Contractor will provide a copy of the agreed work program to each beneficiary household.

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
2. Site Preparation and Shop drawings	• **Selection of Latrine Design Option**: Through informed choice process, facilitated by the NGO team and the Village Development Committee, the pour-flush latrine for the family toilet. • **Site Selection**: Upon commencement of the works, the construction site for the family latrine will be selected by the beneficiary households following the criteria include but not limit to the followings: good location for construction of a septic tank, at least 30 meters away from an existing well, and not prone to flood water. • The Contractor is responsible for preparing the shop drawings for construction and submit for approval by the Project Manager prior to commencement of the works.
3. Tools and Materials	• **Tools:** hoes, baskets, spades, hammers, measuring tapes, concrete ring lifting equipment, profile boards, line level, string lines, etc. • **Materials:** Portland cement, river sand, coarse aggregate (gravel), screw zinc, water, concrete ring, septic tanks, bricks, tiles, toilet pan, nails, wire, plastic PVC-∅100 mm and ∅21, 27mm pipes, steel bar and all other materials as shown in the *approved* technical drawings and/or as approved by the Project Manager and/or Employer. • **Concrete Ring moulds:** a minimum of one steel concrete ring mould per village is required.
4. Soil Excavation	• **Soil Excavation and Digging:** The first activity in the construction of family latrine is the excavation and digging of soil, and to place one concrete ring as shown in the technical drawing. Safety measures shall be taken to ensure the safety of workers.
5. Latrine Section: Installation of Septic Tank	• **Compaction:** After soil excavation, compacted soil. Then a 50mm thick layer of lean concrete shall be placed on top of the stone. • **Installation of Concrete rings:** After the soil excavation, the installation of culvert and the PVC pipe with relevant diameter must also be installed and firmly attached to the concrete ring. • **Back Filling:** After completing the installation of the PVC pipe into the concrete ring, the concrete ring must be back-filled all around with materials approved by the Engineer, and a concrete cover placed over the concrete rings.
6. Latrine Section:	• **Installation of Ceramic water seal pan and Concrete Mortar:** concrete mortar must be mixed to satisfaction of the Engineer and installed together with the Ceramic water seal pan in accordance with the dimensions and levels as shown in the approved construction drawings.
7. RC Structures	• Construction of slab. Structural members are constructed with steel reinforced concrete, and with dimensions, levels…etc as shown in the approved shop drawings or as approved by the Engineer.

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
	• Prior to pouring concrete, slump test shall be conducted. A mixed concrete of slump of 50-100mm shall be used. • The slab shall be constructed from reinforced concrete and shall be as shown in the drawing. The slab shall be finished with a smooth and level surface that is free from any low or high points. The mesh shall be properly tied together with steel tie wire to maintain shape whilst concrete is being poured. The minimum thickness of concrete cover for all steel reinforcement shall be 25mm.
8. Masonry walls	• The masonry wall shall be constructed with approved bricks with quality and appropriate sizes, with dimensions as shown in approved shop drawings or as approved by the Engineer. • **Brick Walls** Bricks shall be thoroughly washed and soaked for at least 4 hours before being used. Bricks shall be laid plumb and level along a string. The height of one day's work shall not exceed 1500mm. Bricks shall be laid to provide good keying in all direction as follows: - Along structural members: diam. 6mm rods cast in structure, extending not less than 200mm in to mortar joints and placed at vertical interval of not more than 300mm and horizontal intervals not exceeding 700mm. - Between wall panels, attention shall be given to ensure cross bond between both walls and necessary steel rods shall be provided as above. All brick works joints shall be filled full with mortar. Joints in brick work receiving rendering afterwards shall be raked clean to a depth of 10mm to ensure a proper bonding. Masonry shall be cured for a period of 7 days. A single skin brick wall shall be constructed between columns as wall cladding and also as the internal partition walls. The partition walls shall extend full height to the roof. The brickwork shall be joined by mortar joint of nominal thickness of 15 mm. All brickwork shall be constructed in a true and straight vertical plane. All the brickwork shall be constructed by skilled and competent brick-layers. - For a plain brickwork wall of a half brick thickness or 100mm, the plain bricks need conforming to the following specification: Minimum compressive strength should be 14 MPa for individual bricks whereas an average over 5 bricks should attain strength of 18 MPA. Bricks shall be laid in common bond. Unless otherwise specified, plain bricks shall be used in all masonry works under foundation, water tank and other structure exposed to water. - Hollow brick work of a half brick thickness or 100mm needs conforming to the following specification: They will be extruded brick type, properly fired in a kiln. Bricks shall be laid in stretcher bond. The maximum height of 100mm thick brick masonry wall shall not exceed 3meters between tie beam and the horizontal distance between cross walls or vertical structural elements shall not exceed 4,5m.

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
	Wall Mortar Rendering All rendering (finishing) works shall be carried out by experienced/skilled masonry workers. Plastering shall be executed in a neat, true and workmanship manner. Corners shall not be rounded or beveled, unless specified. All intersections, edged and corners shall have sharp edged, unless otherwise directed and shall be straight angles. Lines shall be straight and true. Surface shall be plane and smooth. The plastering shall be carried out at least two weeks after masonry work is completed. The render shall be applied on both sides of walls. The thickness of the mortar finish shall be a minimum of 15mm. If the finishing is found not to be smooth or as per the thickness specified, the finishing will be rejected and the Builder shall redo and rectify the problem. Cement shall preferably be mixed cement type using Portland cement added with lime as follow: - For internal brick surface: Mix in volume (1:6) 1 part of Portland cement to 6 parts of fine sand or approximately 250 kg of cement per m^3 of sand. The mix shall be added with 20% of lime. - On concrete surface or external brick surface: Mix in volume (1:4) 1 part Portland Cement to 4 parts of fine sand. Mortar shall be mixed in such quantities as it can be used within a period of 3 minutes after the mixing with water. Mortar that has taken initial setting shall be discarded. The water-cement factor of the mortar shall be no more than 0.5. Before starting plaster works, brick joints shall be raked to a depth of 10mm. Concrete surfaces shall be sufficiently roughened. All surfaces shall be cleaned to remove any loose materials and shall be thoroughly dampened with water. Curing of plaster shall consist in keeping the fishing surface wet throughout the progress of works and during 10 days thereafter. If any cracks or blemishes appear, the defects shall be repaired by the Builder at his own expenses. Plaster shall be trowelled and floated to a true and plumb surface and tested frequently during the progress of the work with a straight edge sufficiently long. There shall be no overlaps or construction joints in a single unbroken surface unless its size is cover 35 m2.
9. Roofing	The roof works includes but not limit to the following works (wood structures and zinc works): - Supply and construction of wood rafters - Supply and construction of wood purlins - Supply and construction of wood bracing and supporting - Supply and construction of wood connection

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
	- Supply and installation of zinc doors - All wood and zinc works required for the good use of all the installation - All other incidental items to complete the works.
10. Staffing	• **Staffing:** If the contractor intends to hire skilled and unskilled labor from the beneficiary community where the family latrine will be constructed (i.e. labor for concrete ring and slab making, and construction works), the contractor shall discuss with the village chiefs for labor cost, number of labor required, payment terms, and working conditions. Although the Project Manager may facilitate the discussion, the Project Manager will not decide on these matters. The Contractor must negotiate with the village chief, and should make written agreement signed by both parties. The Contractor must ensure that the selected skilled and unskilled laborer must be capable and willing to complete the contracted activities for the construction of public latrine and the contractor must pay laborers on time in accordance with the agreed payment terms. • The contractor shall not employ the children.
11. Payment for latrines	• Payment for latrines shall be made for completed works in all aspects and in accordance with the specifications, and per the pay items in the Bill of Quantity.

2) SUPPLY OF CONSTRUCTION MATERIALS AND CONSTRUCTION PROGRAM

The Contractor shall submit to the Project Manager for review and approval the construction program for the whole of the works, construction shop drawings, materials, samples and equipment product data, samples and test results and the requirement as specified in related sections or required by the Procurement Manager, prior to the intended date of use of all such materials and equipment in the permanent works. The Project Manager shall review all submittals to ensure that they conform to the Contract.

Except as otherwise so stated, the Project Manager shall review the construction program, shop drawings, materials, samples and equipment product data, samples and test results within fourteen (14) days of the submission by the Contractor.

The Project Manager shall inform the Contractor if the approval will take a longer period than fourteen (14) days. Unless the submittal is reviewed and approved by the Project Manager, work involving relevant products or materials may not proceed.

The Project Manager's review will be signified by comments as required identifying items for resubmission and by stamp of the Project Manager when work is released for distribution. The Contractor's contractual responsibility shall not be relieved by the Project Manager's review of submittals.

Samples and/or brochures and manufacturer's specifications for all construction materials to be used in the construction of the latrines shall be submitted to the Project Manager for his approval prior to the works commencing.

The quality of the materials shall be as follows:

2.1. Cement

The cement to be used for the concrete work shall be Ordinary Portland Cement (Type II) to BS 12: 1971 or ASTM C 150-97.

All cement for masonry and plastering shall be **Portland Cement-ASTM.C150 TYPE I**. No other type of cement shall be used unless the Contractor has specified an equivalent alternative at the time of bidding and it has been approved in writing by the Engineer. It shall be the Builder's responsibility to provide technical documentation with his bid supporting any request to use an alternative type of cement.

2.2. Steel Reinforcement

Steel reinforcement bar shall be Grade 300 (Yield Strength 235 N/mm2) round steel bar and sizes, dimensions and weight of the bars shall confirm to the requirements of British Standards, ASTM, or equivalent.

All steel reinforcement shall be clean and free of scale, oil, dirt, pits or deformities.

The steel used in the reinforced concrete shall be in accordance with ASTM A615. The grade of steel reinforcement shall be defined in N/mm² as specified in the Drawings. Manufacturer's test certificate shall be submitted to the Engineer for his approval. The Engineer may instruct the Builder to carry out additional test if required.

All steel reinforcement bar and tie wires used in the production of reinforced concrete shall be new, clean and free of grease and rust. Steel bars that split when bent shall be rejected. Steel reinforcement bars that are larger in size than 10mm shall be "deformed bar" type of reinforcement. These bigger bars shall not be a smooth round bar but shall have a braised surface. Steel reinforcement shall be strongly tied together and into position so that the steel is not moved when the concrete mix is being vibrated.

The standard weight per meter that shall be applied for the various bar are as follow:

Ø6mm 0.222kg	Ø12mm 0.888kg
Ø8mm 0.395kg	Ø14mm 1.208kg
Ø10mm0.617kg	Ø16mm 1.578kg

Reinforcement accessories consisting of spaces, chairs, ties and pre-cast concrete blocks shall be provided for placing the reinforcement and securing specified concrete cover of the reinforcement.

Cutting and bending shall be performed at a central location equipped and suitable for that activity. Bars shall be accurately cut and bent as indicated on the shop drawing. Bars shall be bent cold. Heating of bars for bending or straightening will not be allowed.

Reinforcement bars shall be placed in accordance with the drawings provided. The bars shall be supported on metal chairs or spacers or on pre cast concrete blocks with a minimum dimension of 38mm by 38mm. The spacers will be securely tied to the reinforcement in place with spacing of maximum 500 X 500 mm in case of slabs and minimum 2 blocks per meter run of beam and column. Hoops and stirrups shall be accurately

spaced and wired to the reinforcement. No wood will be allowed inside the form.

Reinforcement shall be put in place and rigidly tied or wired with steel tie wire at all splices and crossing points and intersection. Point ends of wire ties shall always be away from formwork. Laps of splices shall be adequate to transfer stress by bond. Bars lap a minimum of 40 times the applied diameter. Whenever possible, splices of adjacent bars shall be staggered by a minimum of lap length. Concrete coverage for steel reinforcement shall be of 50mm.

2.3. Water

Water used for **mixing of concrete** or mortar shall be clean and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substances and shall have a Total Dissolved Salts content of less than 2000 mg/l TDS. Mix water shall not be taken from reducing environments, such as swamps, wetland or from lakes.

2.4. Aggregates and Sand

The aggregates shall be appropriate for concrete use as follows:

- Unless otherwise specified, aggregate shall be complied with ASTM C33. Aggregate for concrete and mortar shall be hard and dense and free from earth, clay, shale or decomposed stone, organic matter and other impurities.

- Coarse aggregates for concrete work: Appropriate in grain-size distribution with maximum size of 20 to 25 mm.
- Sand for concrete work: Sand with silt content of maximum 3% and shall number 3 in grain size. River sand is preferred. Maritime sand shall not be used.

- Sand for masonry work: Sand used for producing concrete shall be well-graded, clean, sharp sand. The range of sand particle sizes shall be from 1mm to 5mm. The sand shall not contain any clay particles or organic material.

2.5. Wood

Wood for structure section as column (size Ø100mm) , roof rafter, roof purlin, wall rafter (size 40mm x 80mm) shall be dry and protected from decayed by painting with oil after cleaning.

2.6. CONCRETE MIX

The concrete used for the latrine shall consist of Ordinary Portland Cement, water and aggregate, and admixture, if necessary. The admixture shall be selected depending on the natural conditions at the site, and the tentative mixture will be made as below. The trial mix shall be conducted to obtain the actual mixture for the intended design strength of concrete. Having confirmed the concrete strength, the contractor shall submit the mixture to Project manager for approval. Afterward, the contractor shall use the approved mixture for the construction. The Engineer has right to reject the works if low quality of concrete had been used and the contractor will re-do the works with his own cost to the satisfaction of the Engineer.

When required by the Engineer the Contractor shall carry out tests of the total chloride content of the concrete mix. The total alkali content shall not exceed 3.0 kg/m3 of the concrete. Use of aggregate that contain potentially alkali shall not be permitted.

Table 1 – Tentative Concrete mix proportions (Grade 25 Concrete)

Item	Unit	Mix by volume	Quantities per cum of mix	Approximate Quantities per 50 kg of bag of cement
Cement	kg	1	350	1
Sand (Dry)	m^3	2	0.50	0.071
10 mm x 20 mm aggregates (Dry)	m^3	4	0.75	0.107
Water	Litre	-	210	32.4

Concrete shall be cured for a minimum of two (2) days by adequate curing method after pouring. After placing, the surface of concrete shall be covered with mats or others and shall be kept humid for an appropriate period. The placed concrete shall be protected against external loads, impact and other harmful factors for 10 days.

Rate of sampling

The sampling of works concrete shall be at the average rate of one sample for every 20m3 concrete placed. If, for any reason the Engineer is not satisfied with the works concrete, he may instruct the contractor to further increase the rate of sampling. The samples shall be taken at the point oil discharge of the mixer or in the case of ready mixed concrete at the point of discharge from the vehicle or the point of casting as directed by the Engineer. At least one set of sample shall be taken from each individual placement of concrete. For reinforced concrete 6 cubes shall be made from each sample of concrete taken, 3 cubes for testing after 28 days.

2.7. LEAN CONCRETE MIX

Table 2 – Tentative Lean Concrete mix proportions (Grade 15 Concrete)

Item	Unit	Mix by volume	Quantities per cum of mix	Approximate Quantities per 50 kg of bag of cement
Cement	Kg	1	210	1
Sand (Dry)	m^3	3	0.56	0.13
10 mm x 20 mm aggregate (Dry)	m^3	6	0.78	0.18
Water	Litre	-	126	30

2.8. MORTAR

- For general masonry work: The mix ratio of the mortar shall be (1:4) in volume or 1 part of cement for 4 parts of sand with a minimum cement content of 400kg/m^3. Sand for cement mortar shall not have particles of clay.

- For masonry in foundation or exposed to water: Mix volume (1:3) 1 part of cement with 3 parts of sand with a minimum cement content of 500kg/m^3. The cement shall preferably be mixed cement type for masonry work or Portland type 1 cement added 20% of lime. Fine will be clean and void of saline or other destructive minerals and organic matters.

Mortars shall be mixed dry in the specified proportions until uniform color is obtained. Approved water shall then be mixed sparingly. The water cement ratio shall never exceed 0.5 by weight, unless indicated otherwise by the supervisor. Mortars shall be mixed in such quantities that it can be used within 30 minutes after adding the water in the mix. Mortar that is taken initial set shall not be used, nor shall it be re-mixed with fresh mortar and shall be discarded. Mixing time shall not be less than 5 minutes. Hand mixing will only be allowed on a clean surface and with express permission of the supervisor.

2.9. CERAMIC POUR FLUSH TOILET PAN

Ceramic water pour flush toilet pans shall be of the highest quality, complete with places for feet with ribbed section, white in colour, glazed and of the following minimum external dimensions:

Length:	500mm
Width:	400mm
Depth from top of pan to underside of water seal:	400mm
Minimum water seal depth:	30mm

The toilet pan shall be securely bedded and sealed on to the concrete slab with cement mortar (cement 1: sand 3) .

2.10. PVC PIPES:

U-PVC waste water pipe and ventilation pipes and fittings shall be of pressure rating 8.5 bars.

2.11. COMPACTION:

All soil compaction shall be done in layers not exceeding 20cm thickness.

2.12. Bricks

Bricks shall be made of burnt clay and be of first quality in strength and appearance. They shall be free from saline deposit, be thoroughly oven or kiln baked without being vitrified, of uniform color, regular size, form and texture with sharp square edges and parallel faces. Any bricks that are soft, porous or not completely oven dried shall be rejected. Bricks shall be regular in shape and of size 90mmx90mmx190mm for the hollow brick and 45mmx90mmx190mm for the solid brick. All bricks shall be soaked thoroughly before being placed in the brickwork. If any area of brickwork is found to contain poor quality bricks, the area shall be identified, the portion of brickwork demolished and replaced by the Builder.

2.13. Latrine Wall

Latrine wall shall be made from two material with 40mm x 80mm wood inside and 20mm of zinc for outside wall. All woods shall be dry and protected from decayed by painting with oil after cleaning.

2.14. Wall and floor tiling

Glazed ceramic tiles shall be 300 X 600mm for the walls and floor and 300mmm X 300mm for the urinal with a maximum tolerance of 1mm overall. Tiles on the floor shall be not slipping. Tiles shall be square and plane. The glazed surface shall be free of defects such as air bubbles, chips or cracks. Unless specified otherwise in the drawings, glazed ceramic tiles shall be white.

Tiles shall be installed in true plane using liquid cement bedding. The laying pattern shall be such that cutting of tiles is minimized. Tile joints shall be 2mm wide and straight: vertical and horizontal protruding shall be made with beveled full size tiles. The exposed tile edges shall not be allowed. Excess bedding material in tile joints shall be removed before final setting.

2.15. Plumbing

Water distribution

Contractor engages his responsibility for the system (check the pressure, diam of the PVC…) and he will make his own plans of the network.

In buildings all pipes shall be concealed in walls. Prior to rendering walls, water installation shall be completed and tested under pressure for leaks.

Plumbing hardware and fittings

Each storage basin shall be provided with a water pipe for filling. This shall consist in a concealed grade valve in wall extended by a pipe, and elbow and a tap above the basin.

Sewer

All sewer disposals from toilets inside the toilets block(s) shall be made using 10mm, 7.5mm, 3.4mm or 2.1mm Thai PVC pipe type 8.5. Sewer shall dispose in straight line to manholes as located in the drawings. Each sewer shall be ventilated at the starting point of the stack or line with a 27mm diam PVC pipe.

Stacks pipe shall dispose in manholes located in the building plinth protection. The inlet or stack pipe in the manhole shall be installed such as it forms a water seal to prevent return of smell in the rooms.

Sewer pipe laid horizontally shall have the following gradients: Before or upstream of the septic tank, the gradient shall be 1:20 (5%) giving a fall of 50mm per meter run of pipe. All “T” sections shall be made of 45 degrees “Y” fittings and a 45 degrees elbow. Elbows of 90 degrees shall not be used, instead 2 elbows of 45 degrees shall be used. Each stack shall be provided with a ventilation pipe extending above the roof level. Necessary access fittings for cleaning and maintenance shall be provided as specified on the drawings. Gradients of drainage, sewer and ventilation after septic tanks shall be: Diam 100mm sewer: 1:50, rainwater: 1:60

The work shall be carefully laid out in advance of any cutting into the construction. No cutting will be done without the written permission of the supervisor. Cutting shall be carefully done and any damage to the building, the piping, as a result of the cutting shall be repaired by a skilled worker and without any cost to the

Employer. Pipe sleeves will be required for the crossing of beams if pipes cannot cross underneath the beams. Pipe locations shall not interfere with the reinforcement in the beams or floor or with the shear concrete in or near the beams or walls.

Squatting pan

Vitreous China squatting pan shall be white ceramic type of pan karat type or equivalent. The pan shall have a water-seal “S” trap and be suitable for connection to a diam 100m pipe. The pan shall be installed using white cement.

TRAINING REPORT

On

Disaster Risk Reduction (DRR)/Climate Change Adaptation (CCA)

I. Date: October 15th -16th 2019

II. Venue: Samroang Primary School, Samroang village

III. Topics

1. DM Law framework (in brief)
2. Basic Concept on DRR/CCA (in detail)
3. Disaster Management Cycle (in detail)
4. Climate Risk Assessment(detail)
5. Emergency Preparedness and Respond Plan (EPRP) (in brief)

A. Topics and activities applied in day 1: October 15, 2019

1. Register
2. Opening remark
3. Introduce
4. Purpose of DRR/CCA training
5. Law on Disaster Management (in brief)
    a. General Provision
    b. Disaster Management Mechanism
    c. Disaster Management Framework
    d. Governance
    e. International Cooperation and Assistance
    f. Rights and Obligation
    g. Resources and Fund
    h. Legal Penalty
6. Basic concept/awareness on DRR/CCA (in detail)
    a. Weather and Climate
    b. Climate Change

c. Root cause of climate change
d. Global warming
e. Greenhouse Gases
f. Sources of Greenhouse gases
g. Effect of Climate Change
    i. Health
    ii. Agriculture
    iii. Forestry
    iv. Source of water/Water cycle
    v. Coast
    vi. Disasters

7. **Disaster Management Cycle**

B. Topics and activities applied in day 2: October 16th , 2019

8. **Risk Assessment (in detail)**
    a. Hazard (flood, drought, thunder storm, earthquake, thunderstorm, wind gas/typhoon/hurricane, epidemic…etc.
    b. Vulnerability (The conditions determined by physical, social, economic, and environmental factors, which increase the susceptibility of a community to the impact of hazards).
    c. Capacity(Ability to withstand shocks/negative events/strengths and coping with using mechanism)

    d. Risk = Hazard + Vulnerability / Capacity

9. **Emergency Preparedness Response Plan (EPRP/CP in brief)**
    a. Preparedness activities (operational readiness coordinated approach)
        i. Capacity building
        ii. Dissemination
        iii. Early warning

iv. Logistic preparation

b. Emergency response activities: (integrated response in accordance with strategic priorities). Conduct emergency operation for;
   i. Search and rescue
   ii. Protection victims (especially children, elders, disabled people)
   iii. Report of the disaster
   iv. Control the overall situation
c. Recovery activities (restored/continuity of operations)
d. Closing remark
e. Took photo in group

IV. Training Schedule

No	Topics	Methodologies	Materials	Facilitators
Time/Day 1:October 15, 2019				
7:30-8:00	Register	All participants participate	List of participant	Sedth and Chakriya
8:00-8:15	Opening remark	Deliver speech to participants		CC/representative
8:15-8:30	Introduce	Self- introduce by all participants		Sedth and Chakriya
8:30-9:00	Purpose of DRR/CCA training	- Deliver speech to participants - Explain	-Flip-chart -Marker	Kosal
9:00-10:00	- DM Law	- Explain - Brainstorm - Ask questions	-Flip-chart -Marker -Documents	Kosal
10:00-10:15: Snack				
10:15-11:30	- Basic Concept on DRR/CCA	- Explain - Brainstorm - Ask questions	-Flip-chart -Marker -Handout	Kosal
11:1:30 Lunch Time				
1:30-3:00	- Basic Concept on DRR/CCA	- Explain - Brainstorm - Ask	-Flip-chart -Marker -Handout	Kosal

		questions		
3:00-3:30	- Basic Concept on DRR/CCA (continues)	- Explain - Brainstorm - Ask questions - Group discussion	-Flip-chart -Marker -Handout	-Kosal -Sedth
3:30-3:45 Snack				
3:45-4:30	- Disaster Management Cycle	- Explain - Brainstorm - Ask questions	-Flip-chart -Marker -Handout	-Kosal
Time/Day 2: October 16, 2019				
7:00-70:30	- Review lesson on 1st day	- Ask questions - Brainstorm - Explain	-Flip-chart -Marker -Handout	Sedth and Chakriya
7:30-8:30	Risk Assessment - Hazard	- Ask questions - Brainstorm - Explain	-Flip-chart -Marker -Handout	Kosal
8:30-10:00	Risk Assessment - Vulnerability	- Ask questions - Brainstorm - Explain	-Flip-chart -Marker -Handout	Kosal
10:00-10:15 Snack				
10:15-11:30	Risk Assessment - Capacity	- Ask questions - Brainstorm - Explain	-Flip-chart -Marker -Handout	Kosal
11:30-1:30 Lunch Time				
1:30-2:00	- Emergency Preparedness Respond Plan(EPRP/CP	- Ask questions - Brainstorm - Explain - Group discussion	-Flip-chart -Marker -Handout	-Kosal -Sedth
2:00-3:30	- Emergency Preparedness Respond Plan(EPRP/CP	- Ask questions - Brainstorm - Explain - Group discussion	-Flip-chart -Marker -Handout	-Kosal -Sedth
3:30-3:45 Snack				
3:45-4:00	- Emergency Preparedness Respond	- Ask questions - Brainstorm	-Flip-chart -Marker -Handout	-Kosal -Sedth

	Plan(EPRP/CP)	- Explain - Group discussion		
4:00-4:15	- Post capacity assessment	- Brainstorm - Explain	-Chart	Sedth
4:15-4:30	- Closing remark	- Deliver speech to participants		CC/ Representative

V. Objective of the Training

The core objectives of the training is educated and aware participants the knowledge on Disaster Risk Reduction and Climate Change Adaptation. After the training the participants are able to;

- Explain about the concept on DRR/CCA frame work.
- Discuss the basic concepts and terms used and approaches to disaster risk management and explain the approaches to village resilience to disaster through DRR preparedness plan, Climate Change awareness, mitigation, and adaptation
- Identify disaster risk and vulnerability of community in the vulnerable villages
- Identify hazards, develop safe village action plan and implementation ,level of impacts and the update and use of commune EPRP/CP

VI. Achieved result

A. Participants: 23, including 13 women from:

1) Commune council 1 (w=0)
2) Police 1 (w=0)
3) Villager leaders 2 (w=0)
4) Teacher 1 (w=0)
5) Students 5 (girl=4)
6) Elders 3 (w=3)
7) Villagers 13 (w=10)

B. Classified of Understanding Level:

Topic/contents	Level of understanding			
	Poor	Average	Good	Very good
Climate change adaptation	3	9	8	3
Terminology of disaster managment	4	9	8	2
Disaster management cycle	3	7	10	3
Disaster management law	3	9	8	3
Emergency Preparedness and respond Plan	2	9	7	5

VII. Lesson learnt

- Regular meeting/networking closely with Commune Council, Village leaders, and potential community members, especially develop clear action plan and timely implement those activities to build more trust with villagers.
- Community members felt freely participated and contributed idea in each discussion session while sample words and semi-methodology were used by facilitators during the session.
- Close working with a group of community leaders is key factor to mobilize the participation of villagers and accelerate the development works.

VIII. Recommendation

- Young trainees such as; school girls/boys/teenagers, and middle age villagers in target villages are fit the training because they can read and write. During the training, the young participants were assessed more interesting with lessons and paid attention with facilitators and noted the important points they learnt. Information provided by teachers/community members that the young participants have much time to share their gained knowledge to others than the old participants, especially during the training session.

IX. Conclusion

Although the time was limited for conduct the training on DRR/CCA , and some of them are old people, participants could learn not only in theory but also practice in group discussion (lesion review) . Participants discussed and provided many inputs during the training to mitigate the effect of climate change. It was the third training course experience of CMEI's team to learn and ways of working with and transferring knowledge on DRR/CCA to community members.

X. Annexes








Date: .....

Certified by: TEAM LEADER

Dr. Dipankar Chyau Patnaik

Date: November 4th 2019

Prepared by: CMEI's CC Advisor

Srei Kosal

TRAINING REPORT

On

Disaster Risk Reduction (DRR)/Climate Change Adaptation (CCA)

I. Date: October 17th -18th 2019

II. Venue: Kbal Hong village, Sangkat Pteah Prey, Pursat

III. Topics

1. DM Law framework (in brief)
2. Basic Concept on DRR/CCA (in detail)
3. Disaster Management Cycle (in detail)
4. Climate Risk Assessment(detail)
5. Emergency Preparedness and Respond Plan (EPRP) (in brief)

A. Topics and activities applied in day 1: October 17, 2019

1. Register
2. Opening remark
3. Introduce
4. Purpose of DRR/CCA training
5. Law on Disaster Management (in brief)
    a. General Provision
    b. Disaster Management Mechanism
    c. Disaster Management Framework
    d. Governance
    e. International Cooperation and Assistance
    f. Rights and Obligation
    g. Resources and Fund
    h. Legal Penalty
6. Basic concept/awareness on DRR/CCA (in detail)
    a. Weather and Climate
    b. Climate Change

c. Root cause of climate change
d. Global warming
e. Greenhouse Gases
f. Sources of Greenhouse gases
g. Effect of Climate Change
    i. Health
    ii. Agriculture
    iii. Forestry
    iv. Source of water/Water cycle
    v. Coast
    vi. Disasters

7. **Disaster Management Cycle**

B. Topics and activities applied in day 2: October 18th , 2019

8. **Risk Assessment (in detail)**
    a. Hazard (flood, drought, thunder storm, earthquake, thunderstorm, wind gas/typhoon/hurricane, epidemic…etc.
    b. Vulnerability (The conditions determined by physical, social, economic, and environmental factors, which increase the susceptibility of a community to the impact of hazards).
    c. Capacity(Ability to withstand shocks/negative events/strengths and coping with using mechanism)

    d. Risk = Hazard + Vulnerability / Capacity

9. **Emergency Preparedness Response Plan (EPRP/CP in brief)**
    a. Preparedness activities (operational readiness coordinated approach)
        i. Capacity building
        ii. Dissemination
        iii. Early warning

iv. Logistic preparation

b. Emergency response activities: (integrated response in accordance with strategic priorities). Conduct emergency operation for;
   i. Search and rescue
   ii. Protection victims (especially children, elders, disabled people)
   iii. Report of the disaster
   iv. Control the overall situation
c. Recovery activities (restored/continuity of operations)
d. Closing remark
e. Took photo in group

IV. Training Schedule

No	Topics	Methodologies	Materials	Facilitators
Time/Day 1:October 17, 2019				
7:30-8:00	Register	All participants participate	List of participant	Chamnab
8:00-8:15	Opening remark	Deliver speech to participants		CC/representative
8:15-8:30	Introduce	Self- introduce by all participants		Chamnab
8:30-9:00	Purpose of DRR/CCA training	- Deliver speech to participants - Explain	-Flip-chart -Marker	Kosal
9:00-10:00	- DM Law	- Explain - Brainstorm - Ask questions	-Flip-chart -Marker -Documents	Kosal
10:00-10:15: Snack				
10:15-11:30	- Basic Concept on DRR/CCA	- Explain - Brainstorm - Ask questions	-Flip-chart -Marker -Handout	Kosal
11:1:30 Lunch Time				
1:30-3:00	- Basic Concept on DRR/CCA	- Explain - Brainstorm - Ask	-Flip-chart -Marker -Handout	Kosal

		questions		
3:00-3:30	- Basic Concept on DRR/CCA (continues)	- Explain - Brainstorm - Ask questions - Group discussion	-Flip-chart -Marker -Handout	-Kosal
3:30-3:45 Snack				
3:45-4:30	- Disaster Management Cycle	- Explain - Brainstorm - Ask questions	-Flip-chart -Marker -Handout	-Kosal
Time/Day 2: October 18, 2019				
7:00-70:30	- Review lesson on 1st day	- Ask questions - Brainstorm - Explain	-Flip-chart -Marker -Handout	Saroeun and Chamnab
7:30-8:30	Risk Assessment - Hazard	- Ask questions - Brainstorm - Explain	-Flip-chart -Marker -Handout	Kosal
8:30-10:00	Risk Assessment - Vulnerability	- Ask questions - Brainstorm - Explain	-Flip-chart -Marker -Handout	Kosal
10:00-10:15 Snack				
10:15-11:30	Risk Assessment - Capacity	- Ask questions - Brainstorm - Explain	-Flip-chart -Marker -Handout	Kosal
11:30-1:30 Lunch Time				
1:30-2:00	- Emergency Preparedness Respond Plan(EPRP/CP	- Ask questions - Brainstorm - Explain - Group discussion	-Flip-chart -Marker -Handout	-Kosal
2:00-3:30	- Emergency Preparedness Respond Plan(EPRP/CP	- Ask questions - Brainstorm - Explain - Group discussion	-Flip-chart -Marker -Handout	-Kosal
3:30-3:45 Snack				
3:45-4:00	- Emergency Preparedness Respond	- Ask questions - Brainstorm	-Flip-chart -Marker -Handout	-Kosal

	Plan(EPRP/CP)	- Explain - Group discussion		
4:00-4:15	- Post capacity assessment	- Brainstorm - Explain	-Chart	Saroeun and Chamnab
4:15-4:30	- Closing remark	- Deliver speech to participants		CC/ Representative

V. Objective of the Training

The core objectives of the training is educated and aware participants the knowledge on Disaster Risk Reduction and Climate Change Adaptation. After the training the participants are able to;

- Explain about the concept on DRR/CCA frame work.
- Discuss the basic concepts and terms used and approaches to disaster risk management and explain the approaches to village resilience to disaster through DRR preparedness plan, Climate Change awareness, mitigation, and adaptation
- Identify disaster risk and vulnerability of community in the vulnerable villages
- Identify hazards, develop safe village action plan and implementation ,level of impacts and the update and use of commune EPRP/CP

VI. Achieved result

A. Participants: 20, including 11 women from:

1) Commune council 2 (w=1)
2) Police 1 (w=0)
3) Villager leaders 2 (w=0)
4) Teacher 1 (w=0)
5) Villagers 14 (w=10)

B. Classified of Understanding Level:

Topic/contents	Level of understanding

	Poor	Average	Good	Very good
Climate change adaptation	0	8	5	7
Disaster Risk Reduction (DRR)	0	5	10	5
Disaster management cycle	0	7	8	5
Disaster management law	0	7	9	4
Emergency Preparedness and respond Plan	6	7	4	3

VII. Lesson learnt

- Regular meeting/networking closely with Commune Council, Village leaders, and potential community members, especially develop clear action plan and timely implement those activities to build more trust with villagers.
- Community members felt freely participated and contributed idea in each discussion session while sample words and semi-methodology were used by facilitators during the session.
- Close working with a group of community leaders is key factor to mobilize the participation of villagers and accelerate the development works.

VIII. Recommendation

- Young trainees such as; school girls/boys/teenagers, and middle age villagers in target villages are fit the training because they can read and write. During the training, the young participants were assessed more interesting with lessons and paid attention with facilitators and noted the important points they learnt but there was no any student during the training conducted in Kbal Hong village.
- The numbers of young participants should be increased for all kinds of trainings at community level because young participants have much time to share information and knowledge they gained to others community

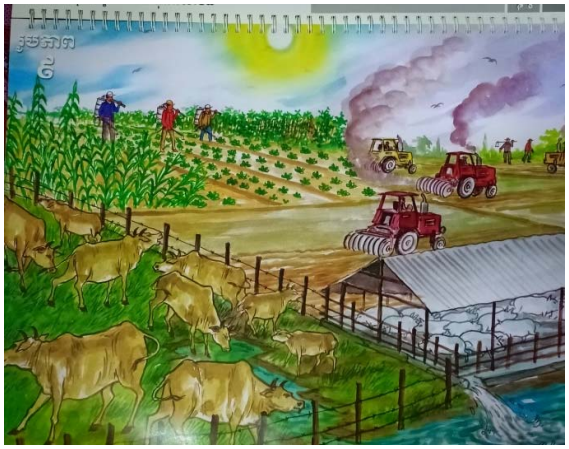
members/students than the old participants both during and after the training session.

- If able the old and very old participants´ number should be deduced.

IX. Conclusion

Although the time was limited for conduct the training on DRR/CCA, and some of them are old people, participants could learn not only in theory but also practice in group discussion (lesion review). Participants discussed and provided many inputs during the training to mitigate the effect of climate change. It was the third training course experience of CMEI´s team to learn and ways of working with and transferring knowledge on DRR/CCA to community members.

X. Annexes








Date: .....

Certified by: TEAM LEADER

Date: November 4th 2019

Prepared by: CMEI's CC Advisor

Dr. Dipankar Chyau Patnaik

Srei Kosal

KINGDOM OF CAMBODIA

Ministry of Public Works and Transport

Integrated Urban Environmental Management in the Tonle Sap Basin Project

Output 3: Community Mobilization and Environmental Improvements (CMEI).

National Competitive Bidding (NCB) Document

For Procurement of Works

Construction of small-scale sanitation and environmental improvement facility in Pusat Towns

Volume III

TECHNICAL SPECIFICATION

Procurement Ref	:	PMU/MPWT/IUEMTSBP/NCB/CW09
Implementing Agency	:	Ministry of Public Works and Transport
Project	:	Integrated Urban Environmental Management In the Tonle Sap Basin Project
Funding	:	Asian Development Bank
Grant/Loan No.	:	ADB Loan 3311-CAM (SF)/ 8295-CAM (SCF), Grant No. 0454-CAM

25 November 2019

Table of Contents

SPECIFICATIONS & PERFORMANCE REQUIREMENTS

1) GENERAL

The Works specified in this Section include the supply, installation, and construction of all items concerning the construction of the all components of household latrines. The Contractor shall perform the works carefully and adequately, providing his own staff, labor force, and the necessary equipment and materials. The Works shall be performed in accordance with these technical specifications, the drawings, other relevant Project Document, and all others norm and regulations in force in the Kingdom of Cambodia.

The term "Project Manager" or the "Engineer" used in this document may also be any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager), who is responsible for supervising the execution of the Works and administering the Contract.

For the household latrines, the Contractor may use locally available construction materials and technologies for the construction of pour-flush household latrines as detailed in the Drawing.

All materials to be incorporated into the Works shall be new or approved by Engineer. Materials shall be transported, stored and stacked according to the manufacturer's instructions and requirements. Materials and products with defects shall be rejected from the site and replaced at the Contractor's cost, if required so by the Engineer.

As soon as reasonable after the Contract has been awarded, the Contractor shall submit to the Engineer for his approval list of proposed suppliers, sources of the materials and technical information concerning the materials to be used for execution of the works. The Engineer may require additional information (certificates, test reports, installation manuals etc.) and shall give his decision no later than two weeks after receiving all necessary information, concerning suppliers and materials.

No material shall be obtained and used in works before its approval by the engineer. Approval shall be obtained sufficiently in advance to avoid delay in field works;

For the purpose of this contract**,** the technical designs and work specifications will be as follows:

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
1. Work Program	• The contractor shall communicate with the Project Manager, respective village chiefs and relevant beneficiary household regarding the work program for the construction of the latrines. • These parties for the construction of latrines will jointly agree the work program and the work program shall also include the agreed list of the names of the beneficiary households. • The work program shall submit the work program for approval from the Project Manager and the Employer prior to the commencement of works. • The Contractor will provide a copy of the agreed work program to each beneficiary household.

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
2. Site Preparation and Shop drawings	• **Selection of Latrine Design Option**: Through informed choice process, facilitated by the NGO team and the Village Development Committee, the pour-flush latrine for the family toilet. • **Site Selection**: Upon commencement of the works, the construction site for the family latrine will be selected by the beneficiary households following the criteria include but not limit to the followings: good location for construction of a septic tank, at least 30 meters away from an existing well, and not prone to flood water. • The Contractor is responsible for preparing the shop drawings for construction and submit for approval by the Project Manager prior to commencement of the works.
3. Tools and Materials	• **Tools:** hoes, baskets, spades, hammers, measuring tapes, concrete ring lifting equipment, profile boards, line level, string lines, etc. • **Materials:** Portland cement, river sand, coarse aggregate (gravel), screw zinc, water, concrete ring, septic tanks, bricks, tiles, toilet pan, nails, wire, plastic PVC-∅100 mm and ∅21, 27mm pipes, steel bar and all other materials as shown in the *approved* technical drawings and/or as approved by the Project Manager and/or Employer. • **Concrete Ring moulds:** a minimum of one steel concrete ring mould per village is required.
4. Soil Excavation	• **Soil Excavation and Digging:** The first activity in the construction of family latrine is the excavation and digging of soil, and to place one concrete ring as shown in the technical drawing. Safety measures shall be taken to ensure the safety of workers.
5. Latrine Section: Installation of Septic Tank	• **Compaction:** After soil excavation, compacted soil. Then a 50mm thick layer of lean concrete shall be placed on top of the stone. • **Installation of Concrete rings:** After the soil excavation, the installation of culvert and the PVC pipe with relevant diameter must also be installed and firmly attached to the concrete ring. • **Back Filling:** After completing the installation of the PVC pipe into the concrete ring, the concrete ring must be back-filled all around with materials approved by the Engineer, and a concrete cover placed over the concrete rings.
6. Latrine Section:	• **Installation of Ceramic water seal pan and Concrete Mortar:** concrete mortar must be mixed to satisfaction of the Engineer and installed together with the Ceramic water seal pan in accordance with the dimensions and levels as shown in the approved construction drawings.
7. RC Structures	• Construction of slab. Structural members are constructed with steel reinforced concrete, and with dimensions, levels…etc as shown in the approved shop drawings or as approved by the Engineer.

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
	• Prior to pouring concrete, slump test shall be conducted. A mixed concrete of slump of 50-100mm shall be used. • The slab shall be constructed from reinforced concrete and shall be as shown in the drawing. The slab shall be finished with a smooth and level surface that is free from any low or high points. The mesh shall be properly tied together with steel tie wire to maintain shape whilst concrete is being poured. The minimum thickness of concrete cover for all steel reinforcement shall be 25mm.
8. Masonry walls	• The masonry wall shall be constructed with approved bricks with quality and appropriate sizes, with dimensions as shown in approved shop drawings or as approved by the Engineer. • **Brick Walls** Bricks shall be thoroughly washed and soaked for at least 4 hours before being used. Bricks shall be laid plumb and level along a string. The height of one day's work shall not exceed 1500mm. Bricks shall be laid to provide good keying in all direction as follows: - Along structural members: diam. 6mm rods cast in structure, extending not less than 200mm in to mortar joints and placed at vertical interval of not more than 300mm and horizontal intervals not exceeding 700mm. - Between wall panels, attention shall be given to ensure cross bond between both walls and necessary steel rods shall be provided as above. All brick works joints shall be filled full with mortar. Joints in brick work receiving rendering afterwards shall be raked clean to a depth of 10mm to ensure a proper bonding. Masonry shall be cured for a period of 7 days. A single skin brick wall shall be constructed between columns as wall cladding and also as the internal partition walls. The partition walls shall extend full height to the roof. The brickwork shall be joined by mortar joint of nominal thickness of 15 mm. All brickwork shall be constructed in a true and straight vertical plane. All the brickwork shall be constructed by skilled and competent brick-layers. - For a plain brickwork wall of a half brick thickness or 100mm, the plain bricks need conforming to the following specification: Minimum compressive strength should be 14 MPa for individual bricks whereas an average over 5 bricks should attain strength of 18 MPA. Bricks shall be laid in common bond. Unless otherwise specified, plain bricks shall be used in all masonry works under foundation, water tank and other structure exposed to water. - Hollow brick work of a half brick thickness or 100mm needs conforming to the following specification: They will be extruded brick type, properly fired in a kiln. Bricks shall be laid in stretcher bond. The maximum height of 100mm thick brick masonry wall shall not exceed 3meters between tie beam and the horizontal distance between cross walls or vertical structural elements shall not exceed 4,5m.

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
	Wall Mortar Rendering All rendering (finishing) works shall be carried out by experienced/skilled masonry workers. Plastering shall be executed in a neat, true and workmanship manner. Corners shall not be rounded or beveled, unless specified. All intersections, edged and corners shall have sharp edged, unless otherwise directed and shall be straight angles. Lines shall be straight and true. Surface shall be plane and smooth. The plastering shall be carried out at least two weeks after masonry work is completed. The render shall be applied on both sides of walls. The thickness of the mortar finish shall be a minimum of 15mm. If the finishing is found not to be smooth or as per the thickness specified, the finishing will be rejected and the Builder shall redo and rectify the problem. Cement shall preferably be mixed cement type using Portland cement added with lime as follow: - For internal brick surface: Mix in volume (1:6) 1 part of Portland cement to 6 parts of fine sand or approximately 250 kg of cement per m^3 of sand. The mix shall be added with 20% of lime. - On concrete surface or external brick surface: Mix in volume (1:4) 1 part Portland Cement to 4 parts of fine sand. Mortar shall be mixed in such quantities as it can be used within a period of 3 minutes after the mixing with water. Mortar that has taken initial setting shall be discarded. The water-cement factor of the mortar shall be no more than 0.5. Before starting plaster works, brick joints shall be raked to a depth of 10mm. Concrete surfaces shall be sufficiently roughened. All surfaces shall be cleaned to remove any loose materials and shall be thoroughly dampened with water. Curing of plaster shall consist in keeping the fishing surface wet throughout the progress of works and during 10 days thereafter. If any cracks or blemishes appear, the defects shall be repaired by the Builder at his own expenses. Plaster shall be trowelled and floated to a true and plumb surface and tested frequently during the progress of the work with a straight edge sufficiently long. There shall be no overlaps or construction joints in a single unbroken surface unless its size is cover 35 m2.
9. Roofing	The roof works includes but not limit to the following works (wood structures and zinc works): - Supply and construction of wood rafters - Supply and construction of wood purlins - Supply and construction of wood bracing and supporting - Supply and construction of wood connection

Work Specifications of Latrine	
Activities/ Requirements	**Specifications**
	- Supply and installation of zinc doors - All wood and zinc works required for the good use of all the installation - All other incidental items to complete the works.
10. Staffing	• **Staffing:** If the contractor intends to hire skilled and unskilled labor from the beneficiary community where the family latrine will be constructed (i.e. labor for concrete ring and slab making, and construction works), the contractor shall discuss with the village chiefs for labor cost, number of labor required, payment terms, and working conditions. Although the Project Manager may facilitate the discussion, the Project Manager will not decide on these matters. The Contractor must negotiate with the village chief, and should make written agreement signed by both parties. The Contractor must ensure that the selected skilled and unskilled laborer must be capable and willing to complete the contracted activities for the construction of public latrine and the contractor must pay laborers on time in accordance with the agreed payment terms. • The contractor shall not employ the children.
11. Payment for latrines	• Payment for latrines shall be made for completed works in all aspects and in accordance with the specifications, and per the pay items in the Bill of Quantity.

2) SUPPLY OF CONSTRUCTION MATERIALS AND CONSTRUCTION PROGRAM

The Contractor shall submit to the Project Manager for review and approval the construction program for the whole of the works, construction shop drawings, materials, samples and equipment product data, samples and test results and the requirement as specified in related sections or required by the Procurement Manager, prior to the intended date of use of all such materials and equipment in the permanent works. The Project Manager shall review all submittals to ensure that they conform to the Contract.

Except as otherwise so stated, the Project Manager shall review the construction program, shop drawings, materials, samples and equipment product data, samples and test results within fourteen (14) days of the submission by the Contractor.

The Project Manager shall inform the Contractor if the approval will take a longer period than fourteen (14) days. Unless the submittal is reviewed and approved by the Project Manager, work involving relevant products or materials may not proceed.

The Project Manager's review will be signified by comments as required identifying items for resubmission and by stamp of the Project Manager when work is released for distribution. The Contractor's contractual responsibility shall not be relieved by the Project Manager's review of submittals.

Samples and/or brochures and manufacturer's specifications for all construction materials to be used in the construction of the latrines shall be submitted to the Project Manager for his approval prior to the works commencing.

The quality of the materials shall be as follows:

2.1. Cement

The cement to be used for the concrete work shall be Ordinary Portland Cement (Type II) to BS 12: 1971 or ASTM C 150-97.

All cement for masonry and plastering shall be **Portland Cement-ASTM.C150 TYPE I**. No other type of cement shall be used unless the Contractor has specified an equivalent alternative at the time of bidding and it has been approved in writing by the Engineer. It shall be the Builder's responsibility to provide technical documentation with his bid supporting any request to use an alternative type of cement.

2.2. Steel Reinforcement

Steel reinforcement bar shall be Grade 300 (Yield Strength 235 N/mm2) round steel bar and sizes, dimensions and weight of the bars shall confirm to the requirements of British Standards, ASTM, or equivalent.

All steel reinforcement shall be clean and free of scale, oil, dirt, pits or deformities.

The steel used in the reinforced concrete shall be in accordance with ASTM A615. The grade of steel reinforcement shall be defined in N/mm² as specified in the Drawings. Manufacturer's test certificate shall be submitted to the Engineer for his approval. The Engineer may instruct the Builder to carry out additional test if required.

All steel reinforcement bar and tie wires used in the production of reinforced concrete shall be new, clean and free of grease and rust. Steel bars that split when bent shall be rejected. Steel reinforcement bars that are larger in size than 10mm shall be "deformed bar" type of reinforcement. These bigger bars shall not be a smooth round bar but shall have a braised surface. Steel reinforcement shall be strongly tied together and into position so that the steel is not moved when the concrete mix is being vibrated.

The standard weight per meter that shall be applied for the various bar are as follow:

Ø6mm 0.222kg	Ø12mm 0.888kg
Ø8mm 0.395kg	Ø14mm 1.208kg
Ø10mm0.617kg	Ø16mm 1.578kg

Reinforcement accessories consisting of spaces, chairs, ties and pre-cast concrete blocks shall be provided for placing the reinforcement and securing specified concrete cover of the reinforcement.

Cutting and bending shall be performed at a central location equipped and suitable for that activity. Bars shall be accurately cut and bent as indicated on the shop drawing. Bars shall be bent cold. Heating of bars for bending or straightening will not be allowed.

Reinforcement bars shall be placed in accordance with the drawings provided. The bars shall be supported on metal chairs or spacers or on pre cast concrete blocks with a minimum dimension of 38mm by 38mm. The spacers will be securely tied to the reinforcement in place with spacing of maximum 500 X 500 mm in case of slabs and minimum 2 blocks per meter run of beam and column. Hoops and stirrups shall be accurately

spaced and wired to the reinforcement. No wood will be allowed inside the form.

Reinforcement shall be put in place and rigidly tied or wired with steel tie wire at all splices and crossing points and intersection. Point ends of wire ties shall always be away from formwork. Laps of splices shall be adequate to transfer stress by bond. Bars lap a minimum of 40 times the applied diameter. Whenever possible, splices of adjacent bars shall be staggered by a minimum of lap length. Concrete coverage for steel reinforcement shall be of 50mm.

2.3. Water

Water used for **mixing of concrete** or mortar shall be clean and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substances and shall have a Total Dissolved Salts content of less than 2000 mg/l TDS. Mix water shall not be taken from reducing environments, such as swamps, wetland or from lakes.

2.4. Aggregates and Sand

The aggregates shall be appropriate for concrete use as follows:

- Unless otherwise specified, aggregate shall be complied with ASTM C33. Aggregate for concrete and mortar shall be hard and dense and free from earth, clay, shale or decomposed stone, organic matter and other impurities.

- Coarse aggregates for concrete work: Appropriate in grain-size distribution with maximum size of 20 to 25 mm.
- Sand for concrete work: Sand with silt content of maximum 3% and shall number 3 in grain size. River sand is preferred. Maritime sand shall not be used.

- Sand for masonry work: Sand used for producing concrete shall be well-graded, clean, sharp sand. The range of sand particle sizes shall be from 1mm to 5mm. The sand shall not contain any clay particles or organic material.

2.5. Wood

Wood for structure section as column (size Ø100mm) , roof rafter, roof purlin, wall rafter (size 40mm x 80mm) shall be dry and protected from decayed by painting with oil after cleaning.

2.6. CONCRETE MIX

The concrete used for the latrine shall consist of Ordinary Portland Cement, water and aggregate, and admixture, if necessary. The admixture shall be selected depending on the natural conditions at the site, and the tentative mixture will be made as below. The trial mix shall be conducted to obtain the actual mixture for the intended design strength of concrete. Having confirmed the concrete strength, the contractor shall submit the mixture to Project manager for approval. Afterward, the contractor shall use the approved mixture for the construction. The Engineer has right to reject the works if low quality of concrete had been used and the contractor will re-do the works with his own cost to the satisfaction of the Engineer.

When required by the Engineer the Contractor shall carry out tests of the total chloride content of the concrete mix. The total alkali content shall not exceed 3.0 kg/m3 of the concrete. Use of aggregate that contain potentially alkali shall not be permitted.

Table 1 – Tentative Concrete mix proportions (Grade 25 Concrete)

Item	Unit	Mix by volume	Quantities per cum of mix	Approximate Quantities per 50 kg of bag of cement
Cement	kg	1	350	1
Sand (Dry)	m^3	2	0.50	0.071
10 mm x 20 mm aggregates (Dry)	m^3	4	0.75	0.107
Water	Litre	-	210	32.4

Concrete shall be cured for a minimum of two (2) days by adequate curing method after pouring. After placing, the surface of concrete shall be covered with mats or others and shall be kept humid for an appropriate period. The placed concrete shall be protected against external loads, impact and other harmful factors for 10 days.

Rate of sampling

The sampling of works concrete shall be at the average rate of one sample for every 20m3 concrete placed. If, for any reason the Engineer is not satisfied with the works concrete, he may instruct the contractor to further increase the rate of sampling. The samples shall be taken at the point oil discharge of the mixer or in the case of ready mixed concrete at the point of discharge from the vehicle or the point of casting as directed by the Engineer. At least one set of sample shall be taken from each individual placement of concrete. For reinforced concrete 6 cubes shall be made from each sample of concrete taken, 3 cubes for testing after 28 days.

2.7. LEAN CONCRETE MIX

Table 2 – Tentative Lean Concrete mix proportions (Grade 15 Concrete)

Item	Unit	Mix by volume	Quantities per cum of mix	Approximate Quantities per 50 kg of bag of cement
Cement	Kg	1	210	1
Sand (Dry)	m^3	3	0.56	0.13
10 mm x 20 mm aggregate (Dry)	m^3	6	0.78	0.18
Water	Litre	-	126	30

2.8. MORTAR

- For general masonry work: The mix ratio of the mortar shall be (1:4) in volume or 1 part of cement for 4 parts of sand with a minimum cement content of 400kg/m^3. Sand for cement mortar shall not have particles of clay.

- For masonry in foundation or exposed to water: Mix volume (1:3) 1 part of cement with 3 parts of sand with a minimum cement content of 500kg/m^3. The cement shall preferably be mixed cement type for masonry work or Portland type 1 cement added 20% of lime. Fine will be clean and void of saline or other destructive minerals and organic matters.

Mortars shall be mixed dry in the specified proportions until uniform color is obtained. Approved water shall then be mixed sparingly. The water cement ratio shall never exceed 0.5 by weight, unless indicated otherwise by the supervisor. Mortars shall be mixed in such quantities that it can be used within 30 minutes after adding the water in the mix. Mortar that is taken initial set shall not be used, nor shall it be re-mixed with fresh mortar and shall be discarded. Mixing time shall not be less than 5 minutes. Hand mixing will only be allowed on a clean surface and with express permission of the supervisor.

2.9. CERAMIC POUR FLUSH TOILET PAN

Ceramic water pour flush toilet pans shall be of the highest quality, complete with places for feet with ribbed section, white in colour, glazed and of the following minimum external dimensions:

Length:	500mm
Width:	400mm
Depth from top of pan to underside of water seal:	400mm
Minimum water seal depth:	30mm

The toilet pan shall be securely bedded and sealed on to the concrete slab with cement mortar (cement 1: sand 3) .

2.10. PVC PIPES:

U-PVC waste water pipe and ventilation pipes and fittings shall be of pressure rating 8.5 bars.

2.11. COMPACTION:

All soil compaction shall be done in layers not exceeding 20cm thickness.

2.12. Bricks

Bricks shall be made of burnt clay and be of first quality in strength and appearance. They shall be free from saline deposit, be thoroughly oven or kiln baked without being vitrified, of uniform color, regular size, form and texture with sharp square edges and parallel faces. Any bricks that are soft, porous or not completely oven dried shall be rejected. Bricks shall be regular in shape and of size 90mmx90mmx190mm for the hollow brick and 45mmx90mmx190mm for the solid brick. All bricks shall be soaked thoroughly before being placed in the brickwork. If any area of brickwork is found to contain poor quality bricks, the area shall be identified, the portion of brickwork demolished and replaced by the Builder.

2.13. Latrine Wall

Latrine wall shall be made from two material with 40mm x 80mm wood inside and 20mm of zinc for outside wall. All woods shall be dry and protected from decayed by painting with oil after cleaning.

2.14. Wall and floor tiling

Glazed ceramic tiles shall be 300 X 600mm for the walls and floor and 300mmm X 300mm for the urinal with a maximum tolerance of 1mm overall. Tiles on the floor shall be not slipping. Tiles shall be square and plane. The glazed surface shall be free of defects such as air bubbles, chips or cracks. Unless specified otherwise in the drawings, glazed ceramic tiles shall be white.

Tiles shall be installed in true plane using liquid cement bedding. The laying pattern shall be such that cutting of tiles is minimized. Tile joints shall be 2mm wide and straight: vertical and horizontal protruding shall be made with beveled full size tiles. The exposed tile edges shall not be allowed. Excess bedding material in tile joints shall be removed before final setting.

2.15. Plumbing

Water distribution

Contractor engages his responsibility for the system (check the pressure, diam of the PVC…) and he will make his own plans of the network.

In buildings all pipes shall be concealed in walls. Prior to rendering walls, water installation shall be completed and tested under pressure for leaks.

Plumbing hardware and fittings

Each storage basin shall be provided with a water pipe for filling. This shall consist in a concealed grade valve in wall extended by a pipe, and elbow and a tap above the basin.

Sewer

All sewer disposals from toilets inside the toilets block(s) shall be made using 10mm, 7.5mm, 3.4mm or 2.1mm Thai PVC pipe type 8.5. Sewer shall dispose in straight line to manholes as located in the drawings. Each sewer shall be ventilated at the starting point of the stack or line with a 27mm diam PVC pipe.

Stacks pipe shall dispose in manholes located in the building plinth protection. The inlet or stack pipe in the manhole shall be installed such as it forms a water seal to prevent return of smell in the rooms.

Sewer pipe laid horizontally shall have the following gradients: Before or upstream of the septic tank, the gradient shall be 1:20 (5%) giving a fall of 50mm per meter run of pipe. All “T” sections shall be made of 45 degrees “Y” fittings and a 45 degrees elbow. Elbows of 90 degrees shall not be used, instead 2 elbows of 45 degrees shall be used. Each stack shall be provided with a ventilation pipe extending above the roof level. Necessary access fittings for cleaning and maintenance shall be provided as specified on the drawings. Gradients of drainage, sewer and ventilation after septic tanks shall be: Diam 100mm sewer: 1:50, rainwater: 1:60

The work shall be carefully laid out in advance of any cutting into the construction. No cutting will be done without the written permission of the supervisor. Cutting shall be carefully done and any damage to the building, the piping, as a result of the cutting shall be repaired by a skilled worker and without any cost to the

Employer. Pipe sleeves will be required for the crossing of beams if pipes cannot cross underneath the beams. Pipe locations shall not interfere with the reinforcement in the beams or floor or with the shear concrete in or near the beams or walls.

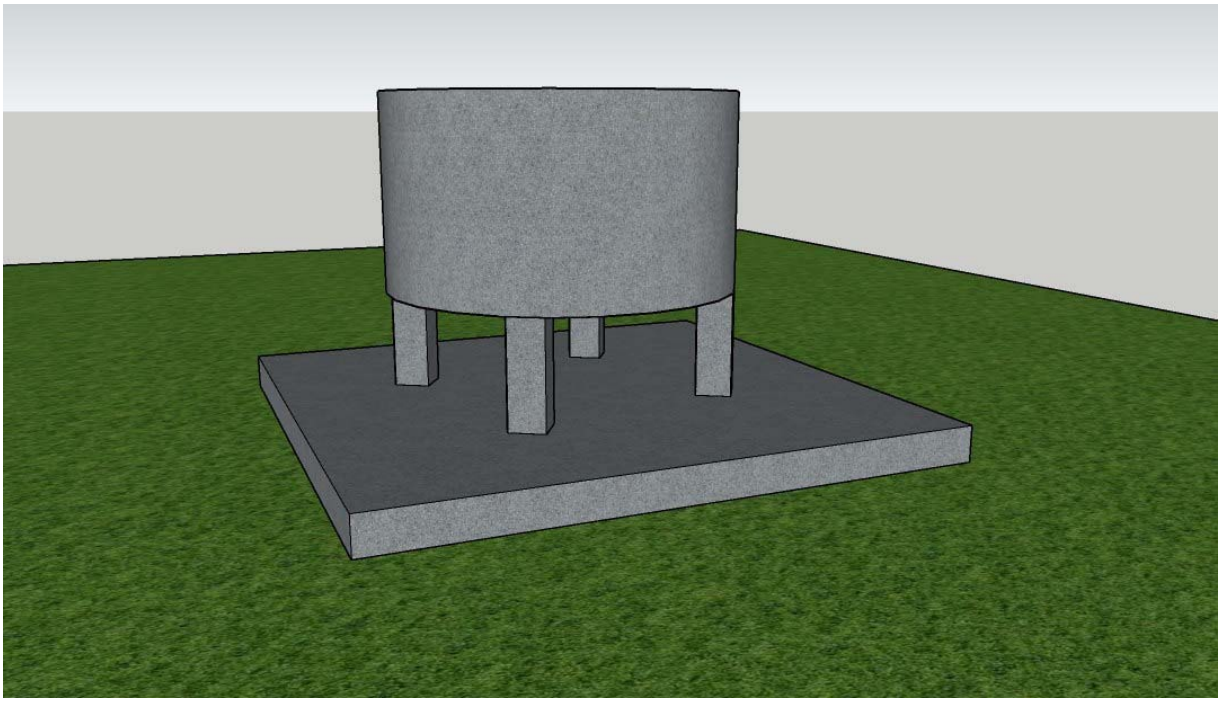
Squatting pan

Vitreous China squatting pan shall be white ceramic type of pan karat type or equivalent. The pan shall have a water-seal “S” trap and be suitable for connection to a diam 100m pipe. The pan shall be installed using white cement.

3) Specifications for rubbish bin

The Constructor shall construct the rubbish bin by installing a steel reinforced concrete (RC) ring bin on a prepared area laid with lean concrete of 10cm thick and short column 01m x 0.1m and high 0.3m from lean concrete to bearing of ring concrete rubbish bins. The RC ring shall be 90cm internal diameter and thickness of 10cm, using concrete Class 25 (see Table 1). The lean concrete areas are 30cm larger than outer diameter of bin. The reinforcement arrangement of the RC bin is the same as that of the septic tank, and as approved by the Engineer.

The locations shall be selected by the Engineer and the Community Chief, and at unflooded locations.



BOQ and Cost Estimation Toilet to Building at Pursat Province									
TOILET CONSTRUCTION BY WOOD AND CONCRETE: 1.5Mx1.5M									
No.	DESCRIPTION WORK	UNIT	QUANTITY	UNIT PRICE ($)	TOTAL ($)	Number of toilet	Total Quantity	TOTAL ($)	
1	Ring concrete (Diameter = 1m)	Number	3.00	9.00	27.00	1	3.00	$	27.00
2	Cover ring concrete(Diameter:1.0m)	Number	1.00	6.00	6.00	1	1.00	$	6.00
3	Deform bar (SD10)	KG	20.00	0.90	18.00	1	20.00	$	18.00
4	Wire connection	KG	2.00	1.20	2.40	1	2.00	$	2.40
5	Cement	Package	12.00	6.00	72.00	1	12.00	$	72.00
6	Hollow brick	Number	1,300.00	0.07	84.50	1	1,300.00	$	84.50
7	River sand	M3	3.11	10.00	31.13	1	3.11	$	31.13
8	Aggregate 1x2	M3	0.68	25.00	16.90	1	0.68	$	16.90
9	Wall Tile (30x60)	Box	2.00	7.00	14.00	1	2.00	$	14.00
10	Floor Tile (30x30)	Box	2.00	6.00	12.00	1	2.00	$	12.00
11	Toilet pan	Number	1.00	12.00	12.00	1	1.00	$	12.00
12	Wood column (Diameter = 0.1m, Length = 5m)	Number	4.00	13.00	52.00	1	4.00	$	52.00
13	Wood rafter, purlin (Width = 0.04m, High = 0.08m, Length = 4m)	Number	14.00	3.00	42.00	1	14.00	$	42.00
14	Zinc for wall and roof (Thickness = 0.25mm)	M2	30.00	3.00	90.00	1	30.00	$	90.00
15	Nail	KG	2.00	1.00	2.00	1	2.00	$	2.00
16	Screw for zinc	KG	2.00	2.00	4.00	1	2.00	$	4.00
17	Blue PVC PIPE (Diameter = 21mm,th:8.5mm, Length = 4m)	M	4.00	1.00	4.00	1	4.00	$	4.00
18	Blue PVC PIPE (Diameter :27mm,th:8.5, Length:4.0m)	M	4.00	1.50	6.00	1	4.00	$	6.00
19	Floor drainer 34	Number	1.00	2.50	2.50	1	1.00	$	2.50
20	Hinge Door	Number	3.00	0.50	1.50	1	3.00	$	1.50
21	PVC PIPE (Diameter:100mm,th:13.5mm, Length:4.0m)	M	4.00	4.50	18.00	1	4.00	$	18.00
22	Blue PVC for connect (Diameter:100mm, S CONNECTION)	Number	1.00	10.00	10.00	1	1.00	$	10.00
23	Oil machine painting on wood	SET	1.00	5.00	5.00	1	1.00	$	5.00
24	Labour to complete the construction	SET	1.00	159.80	159.80	1	1.00	$	159.80
SUB-TOTAL BUDGET								$	692.73

BOQ and Cost Estimation Toilet to Building at Pursat Province								
TOILET CONSTRUCTION BY WOOD AND CONCRETE: 1.5Mx1.5M								
No.	DESCRIPTION WORK	UNIT	QUANTITY	UNIT PRICE ($)	TOTAL ($)	Number of toilet	Total Quantity	TOTAL ($)
1	Ring concrete (Diameter = 1m)	Number	6.00	9.00	54.00	1	6.00	$ 54.00
2	Cover ring concrete(Diameter:1.0m)	Number	2.00	6.00	12.00	1	2.00	$ 12.00
3	Deform bar (SD10)	KG	25.00	0.90	22.50	1	25.00	$ 22.50
4	Wire connection	KG	2.00	1.20	2.40	1	2.00	$ 2.40
5	Porland cement	Package	14.00	6.00	84.00	1	14.00	$ 84.00
6	Hollow brick	Number	1,400.00	0.07	91.00	1	1,400.00	$ 91.00
7	River sand	M3	3.11	10.00	31.13	1	3.11	$ 31.13
8	Aggregate 1x2	M3	0.68	25.00	16.90	1	0.68	$ 16.90
9	Wall Tile (30x60)	Box	2.00	7.00	14.00	1	2.00	$ 14.00
10	Floor Tile (30x30)	Box	2.00	6.00	12.00	1	2.00	$ 12.00
11	Toilet pan	Number	1.00	12.00	12.00	1	1.00	$ 12.00
12	Wood column (Diameter = 0.1m, Length = 5m)	Number	4.00	13.00	52.00	1	4.00	$ 52.00
13	Wood rafter, purlin (Width = 0.04m, High = 0.08m, Length = 4m)	Number	14.00	3.00	42.00	1	14.00	$ 42.00
14	Zinc for wall and roof (Thickness = 0.25mm)	M2	30.00	3.00	90.00	1	30.00	$ 90.00
15	Nail	KG	2.00	1.00	2.00	1	2.00	$ 2.00
16	Screw for zinc	KG	2.00	2.00	4.00	1	2.00	$ 4.00
17	Blue PVC PIPE (Diameter = 21mm,th:8.5mm, Length = 4m)	M	8.00	1.00	8.00	1	8.00	$ 8.00
18	Blue PVC PIPE (Diameter :27mm,th:8.5, Length:4.0m)	M	4.00	1.50	6.00	1	4.00	$ 6.00
19	Floor drainer 34	Number	1.00	2.50	2.50	1	1.00	$ 2.50
20	Hinge Door	Number	3.00	0.50	1.50	1	3.00	$ 1.50
21	PVC PIPE (Diameter:100mm,th:13.5mm, Length:4.0m)	M	8.00	4.50	36.00	1	8.00	$ 36.00
22	Blue PVC for connect (Diameter:100mm, S CONNECTION)	Number	1.00	10.00	10.00	1	1.00	$ 10.00
23	Oil machine painting on wood	SET	1.00	5.00	5.00	1	1.00	$ 5.00
24	Labour to complete the construction	SET	1.00	183.28	183.28	1	1.00	$ 183.28
SUB-TOTAL BUDGET								$ 794.21

BOQ and Cost Estimation ring concrete trash bins to Building at Pursat Province								
TRASH BINS RING CONCRETE D:1.0M, H:0.55M AND FLAT CONCRETE THK:0.1M, B:1.6M, L:1.6M								
No.	DESCRIPTION WORK	UNIT	QUANTITY	UNIT PRICE ($)	TOTAL ($)	Number of toilet	Total Quantity	TOTAL ($)
1	Ring concrete (Diameter = 1m,Hight=0.55m)	Number	1.00	13.00	13.00	1	1.00	$ 13.00
2	Bottom of ring concrete ring (Diameter:1.0m,thk:50mm)	Number	1.00	8.00	8.00	1	1.00	$ 8.00
3	Aggregate	M3	0.53	0.90	0.48	1	0.53	$ 0.48
4	River sand	M3	0.35	1.20	0.42	1	0.35	$ 0.42
5	Porland Cement	Package	5.00	6.00	30.00	1	5.00	$ 30.00
6	Labor construction	set	1.00	7.78	7.78	1	1.00	$ 7.78
SUB-TOTAL BUDGET								$ 59.68

KINGDOM OF CAMBODIA

NATIONAL RELIGION KING

MINISTRY OF PUBLIC WORKS AND TRANSPORT

PROJECT: INTEGRATED URBAN ENVIRONMENTAL MANAGEMENT IN THE TONLE SAP BASIN (IUEMTSB) ADB LOAN No.3311-CAM (SF)

SECTION VI

VOLUME II: DESIGNED DRAWINGS

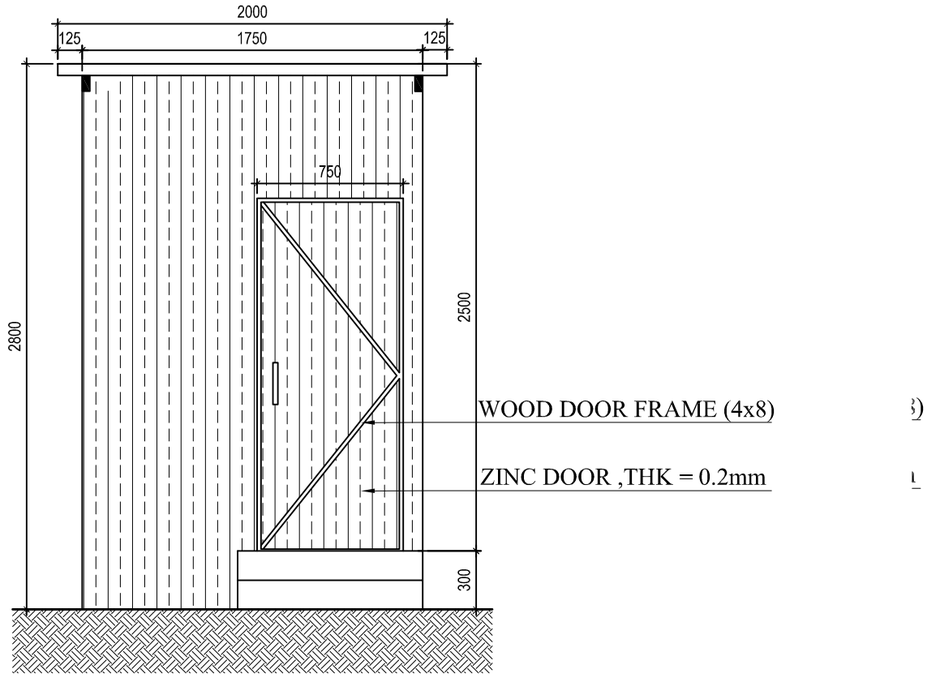
CONSTRUCTION OF .....

NOVEMBER 2019

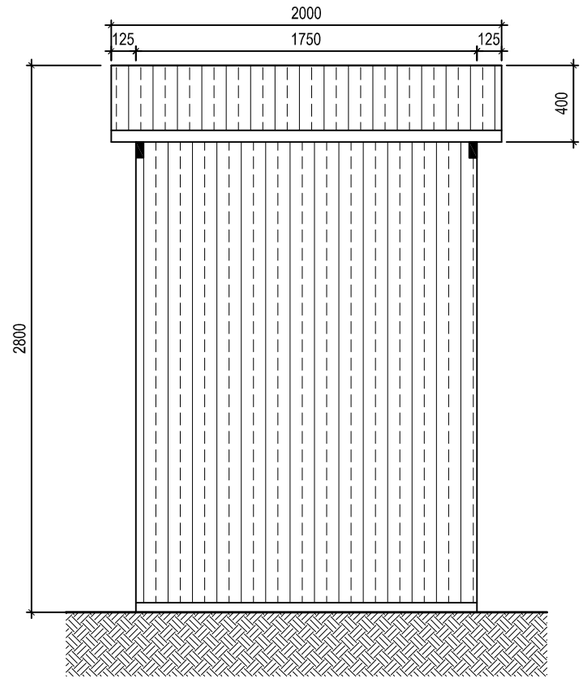
ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន
Community Mobilization and Environmental Improvement CMEI

padek artnership for Development in Kampuchea in association with WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership

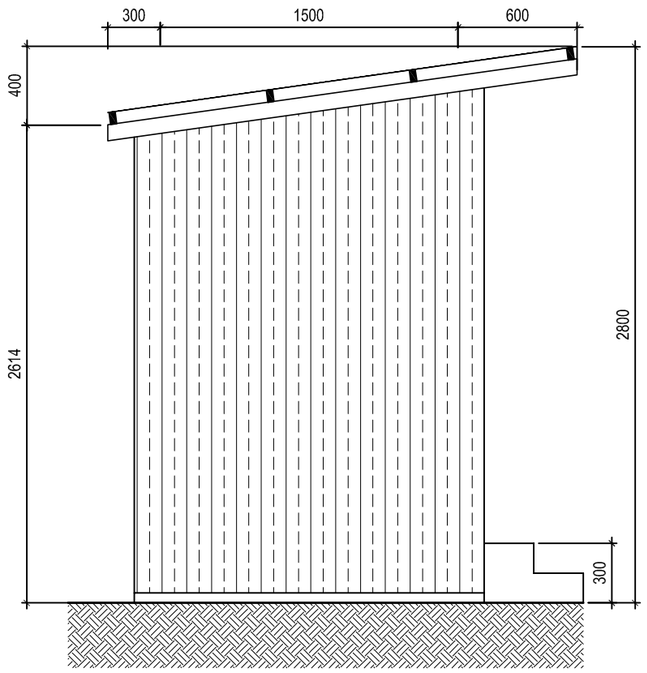
TOILET DRAWING A PIT-25Nov-2019



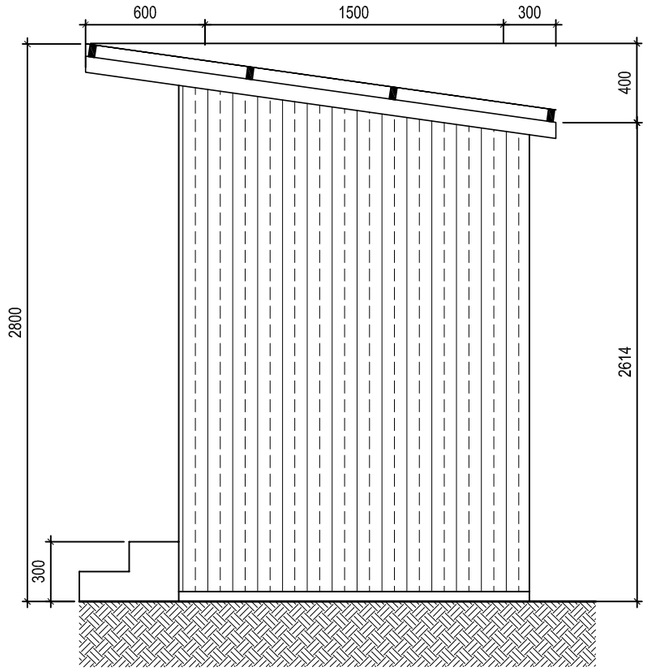
FRONT PLAN VIEW



BACK PLAN VIEW

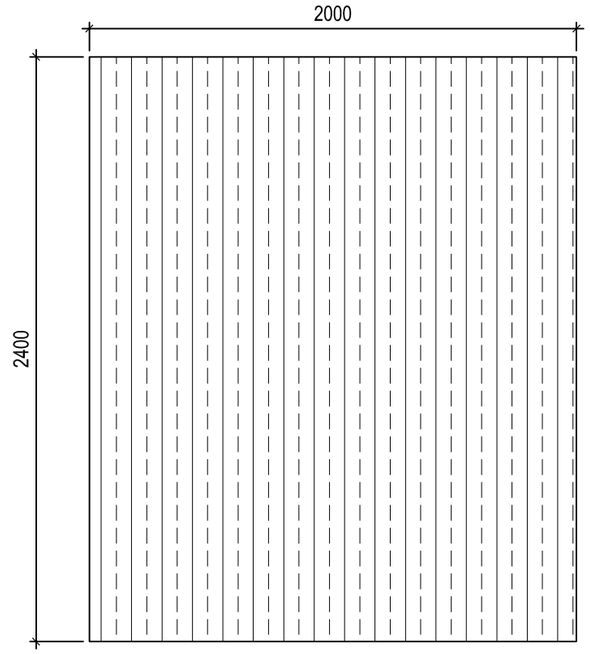


RIGHT PLAN VIEW

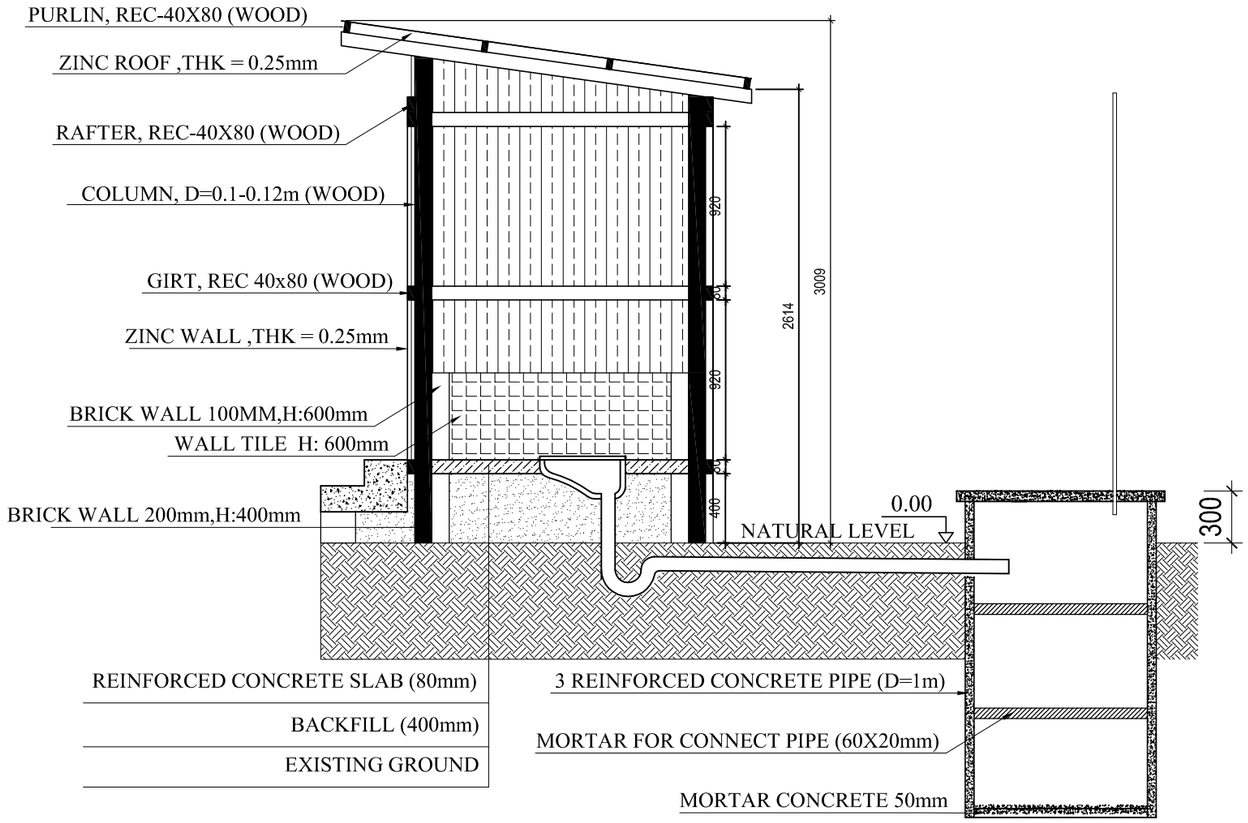


LEFT PLAN VIEW

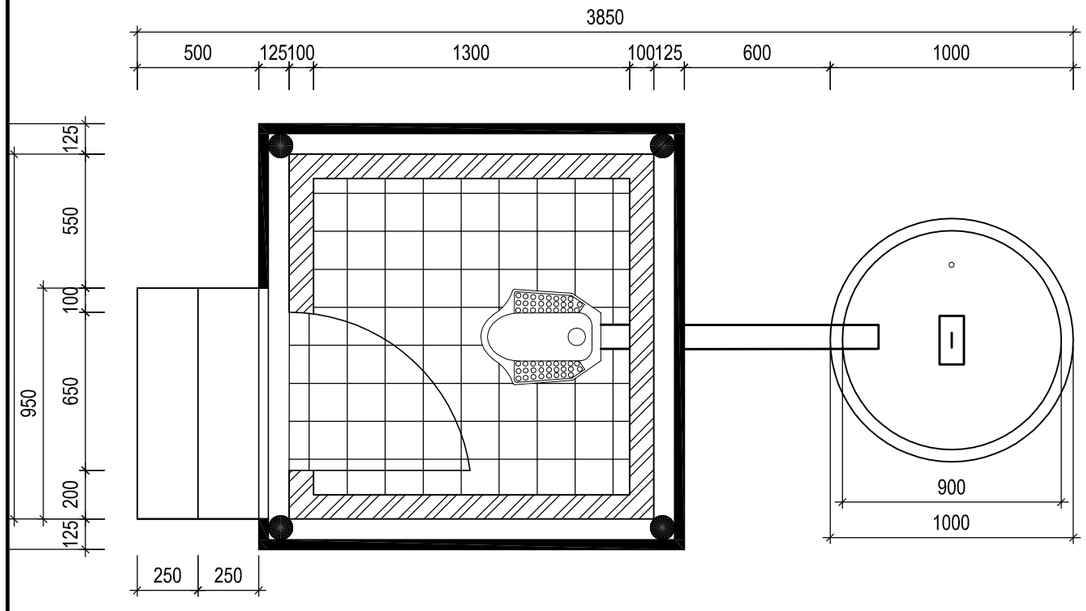
ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន Community Mobilization and Environmental Improvement CMEI; pact Partnership for Development in Kampuchea; in association with WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership	DRAWN BY:	VETH VOEUN		KINGDOM OF CAMBODIA; MINISTRY OF PUBLIC WORKS AND TRANSPORT	SUBMITTED BY: DIPANKAR CHYAU PATNAIK	REV.	DESCRIPTION	DATE	PROJECT: Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)	SCALE: AS SHOWN
	DESIGNED BY:	VETH VOEUN			APPROVED BY: VONG PISITH PROJECT DIRECTOR	1				
	CHECKED BY:	DIPANKAR CHYAU PATNAIK			DATE:	2			DRAWING TITLE:	DRAWING NO.
						3				
						4				
						5				



ROOF PLAN VIEW



SECTION A-A PLAN VIEW



NOTES:

1- LOCATION OF SEPTIC TANK SHALL BE ADJUSTED BASED ON ACTUAL SITE CONDITION
2- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED
3- CONCRETE CLASS SHALL BE
LEAN CONCRETE 15MPa
STRUCTURE PART 25MPa
4- CLEAR COVER TO REINFORCEMENT SHALL BE CAST AGAINST GROUND 50mm AND AIR FACE 25mm
5- ALL REINFORCEMENT TO BE HOT ROLLED GRADE 400 DEFORMED BAR TO AASHTO M31-M-86
6- MINIMUM REINFORCEMENT LAP TO BE 30 BAR DIAMETERS
7- LOCATION OF LAP TO BE APPROVED BY ENGINEER.

ទេសាភិបាលកម្ម និងការកែលម្អបរិស្ថាន Community Mobilization and Environmental Improvement CMEI; pcdek Partnership for Development in Kampuche; in association with WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership	DRAWN BY:	VETH VOEUN		KINGDOM OF CAMBODIA MINISTRY OF PUBLIC WORKS AND TRANSPORT	SUBMITTED BY: DIPANKAR CHYAU PATNAIK	REV.	DESCRIPTION	DATE	PROJECT: Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)	SCALE: AS SHOWN
	DESIGNED BY:	VETH VOEUN			APPROVED BY: VONG PISITH PROJECT DIRECTOR	1				
	CHECKED BY:	DIPANKAR CHYAU PATNAIK			DATE:	2			DRAWING TITLE:	DRAWING NO.
						3				
						4				
						5				

MATERIAL LIST

N.O	DESCRIPTION	UNIT	QUANTITY
1	RING CONCRETE	NUMBER	3
2	COVER RING CONCRETE	NUMBER	1
3	DEFORM BAR(SD10)	KG	20
4	WIRE CONNECTION	KG	2
5	PORTLAND CEMENT	PACKAGE	12
6	HOLLOW BRICK	NUMBER	1300
7	RIVER SAND	M3	3.11
8	AGGREGATE 1X2	M3	0.68
9	WALL TILE (300X600)	BOX	2
10	FLOOR TILE (300X300)	BOX	2
11	TOILET PAN	NUMBER	1
12	WOOD COLUMN (D:0.1M,L:5.0M)	NUMBER	4
13	WOOD RAFTER, PURLIN (4X8)	NUMBER	14
14	ZINC ROOF, WALL (TH:2.5C)	M2	30
15	NAIL	KG	2
16	SCREW FOR ZINC	KG	4
17	BLUE PVC 21MM, TH:8.5	M	4
18	BLUE PVC 27MM,TH:8.5	M	4
19	BLUE PVC 100MM,TH:8.5	M	4
20	FLOOR DRAINAGE 34	NUMBER	1
21	BLUE PVC S CONNECTION	NUMBER	1
22	HINGE DOOR WITH FRAME	NUMBER	4
23	OIL MACHINE PAINTING ON WOOD	SET	1
24	LABOR TO COMPLETE CONSTRUCTION	SET	1

ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន
Community Mobilization and Environmental Improvement CMEI
pcdek partnership for Development in Kampuchea
In association with WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership

DRAWN BY:	VETH VOEUN	
DESIGNED BY:	VETH VOEUN	
CHECKED BY:	DIPANKAR CHYAU PATNAIK	

KINGDOM OF CAMBODIA
MINISTRY OF PUBLIC WORKS AND TRANSPORT

SUBMITTED BY: DIPANKAR CHYAU PATNAIK
APPROVED BY: VONG PISITH, PROJECT DIRECTOR
DATE:

REV.	DESCRIPTION	DATE
1		
2		
3		
4		
5		

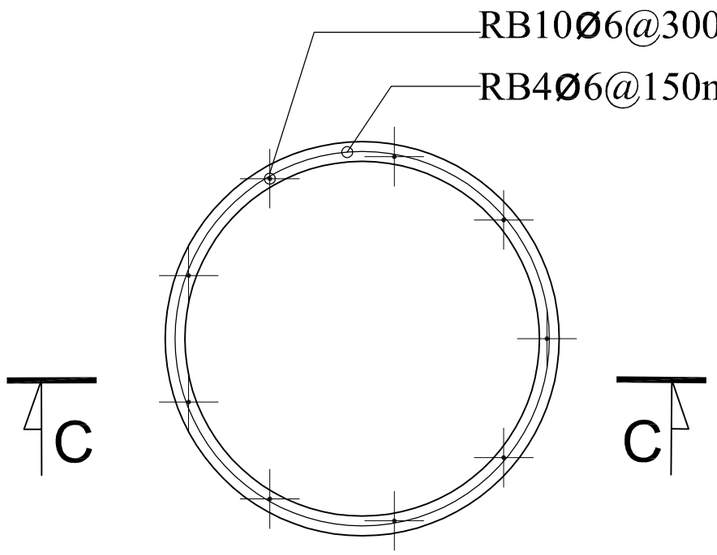
PROJECT: Integrated Urban Environment Management in the Tonle Sap Basin Project
ADB Grant: 0454-CAM(SCF)

DRAWING TITLE:

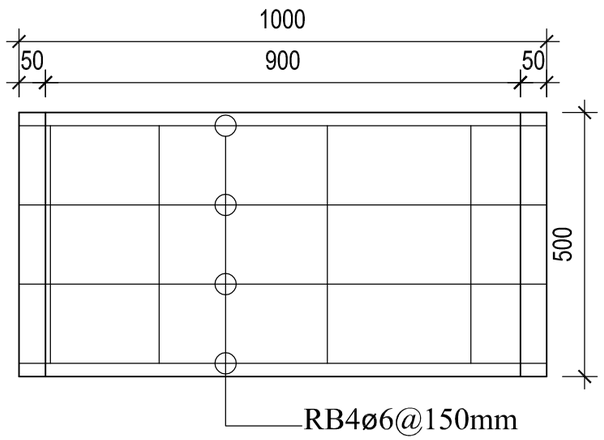
SCALE: AS SHOWN

DRAWING NO.

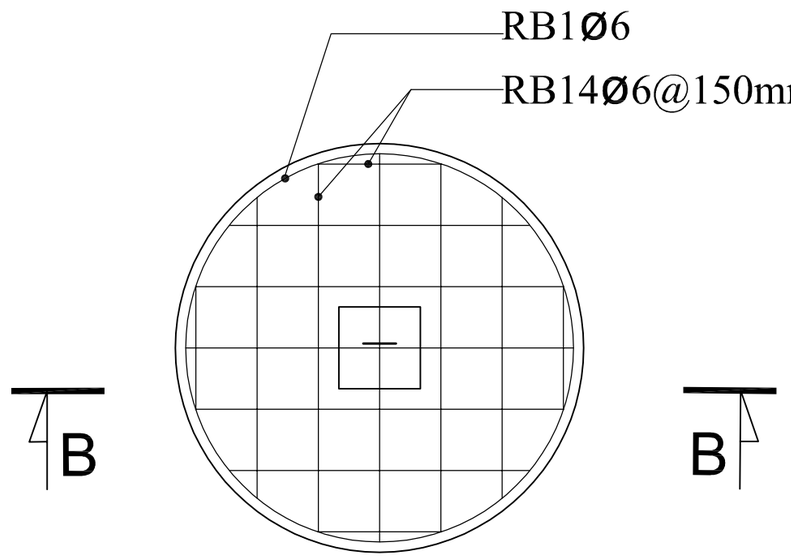
DETAIL REINFORCEMENT FOR RC PIPE AND COVER



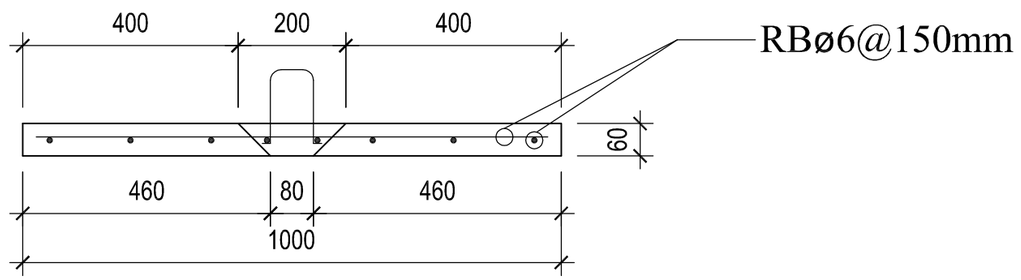
CONCRETE RING



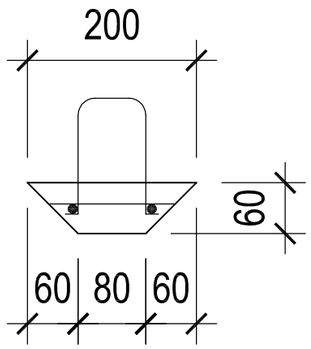
SECTION C-C PLAN VIEW



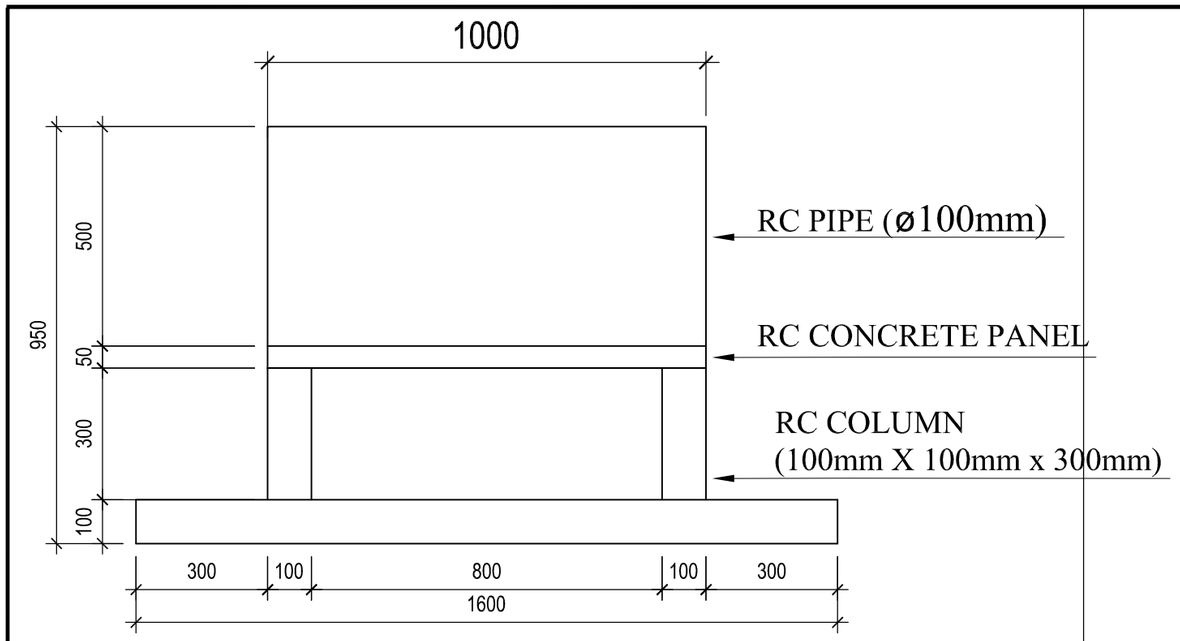
CONCRETE COVER



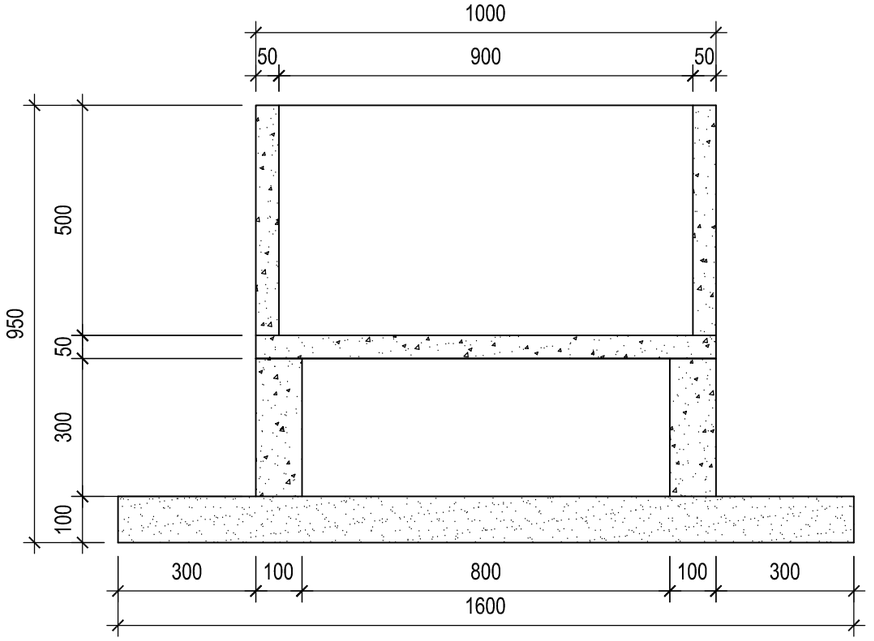
SECTION B-B PLAN VIEW



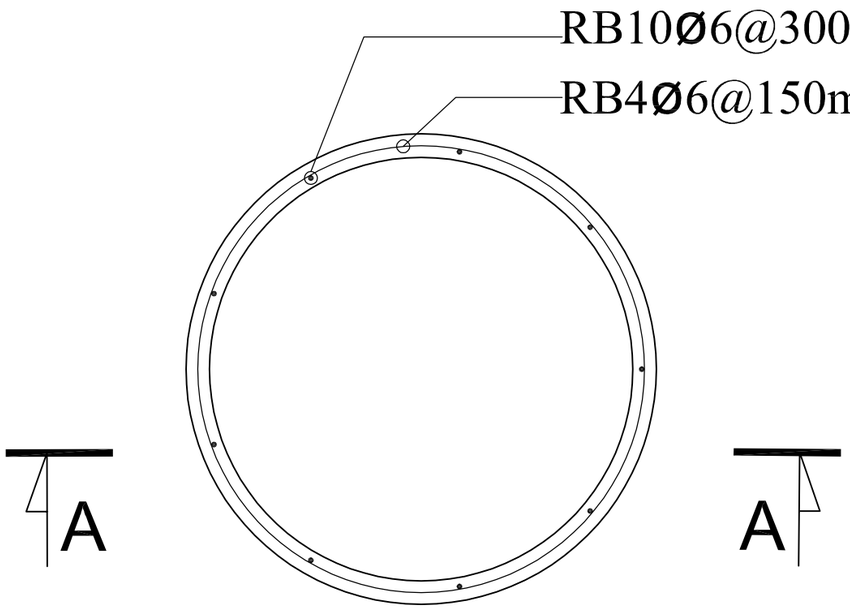
ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន Community Mobilization and Environmental Improvement CMEI; pcdek partnership for Development in Kampuchea; In association with; WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership	DRAWN BY:	VETH VOEUN		KINGDOM OF CAMBODIA MINISTRY OF PUBLIC WORKS AND TRANSPORT	SUBMITTED BY: DIPANKAR CHYAU PATNAIK	REV.	DESCRIPTION	DATE	PROJECT: Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)	SCALE: AS SHOWN
	DESIGNED BY:	VETH VOEUN			APPROVED BY: VONG PISITH PROJECT DIRECTOR	1				
	CHECKED BY:	DIPANKAR CHYAU PATNAIK			DATE:	2			DRAWING TITLE:	DRAWING NO.
						3				
						4				
						5				



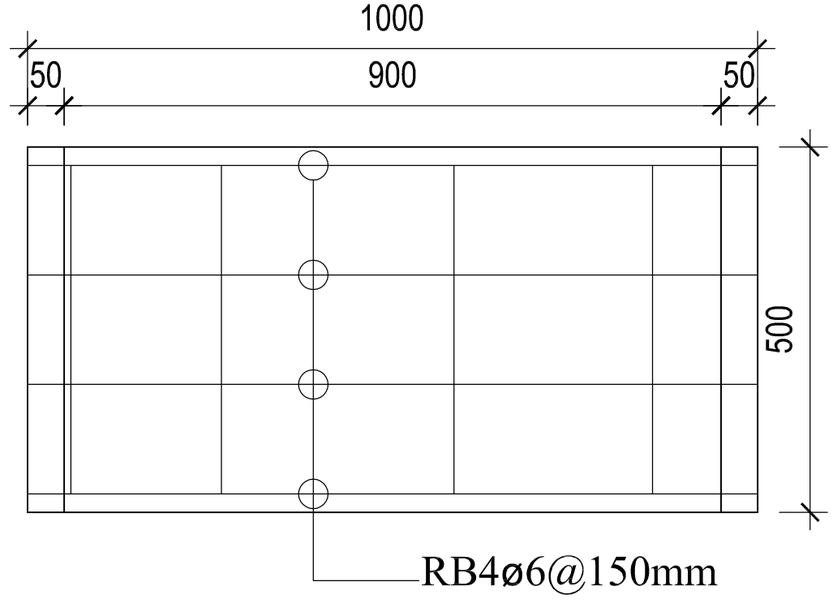
DETAIL RUBBISH BIN



DETAIL RUBBISH BIN SECTION



DETAIL CONCRETE PIPE FOR RUBBISH BIN



SECTION A-A PLAN VIEW

DRAWN BY:	VETH VOEUN		
DESIGNED BY:	VETH VOEUN		
CHECKED BY:	DIPANKAR CHYAU PATNAIK		

KINGDOM OF CAMBODIA

MINISTRY OF PUBLIC WORKS AND TRANSPORT

SUBMITTED BY: DIPANKAR CHYAU PATNAIK

APPROVED BY: VONG PISITH, PROJECT DIRECTOR

DATE:

REV.	DESCRIPTION	DATE
1		
2		
3		
4		
5		

PROJECT: Integrated Urban Environment Management in the Tonle Sap Basin Project
ADB Grant: 0454-CAM(SCF)

DRAWING TITLE:

SCALE: AS SHOWN

DRAWING NO.

KINGDOM OF CAMBODIA

NATIONAL RELIGION KING

MINISTRY OF PUBLIC WORKS AND TRANSPORT

PROJECT: INTEGRATED URBAN ENVIRONMENTAL MANAGEMENT IN THE TONLE SAP BASIN (IUEMTSB) ADB LOAN No.3311-CAM (SF)

SECTION VI

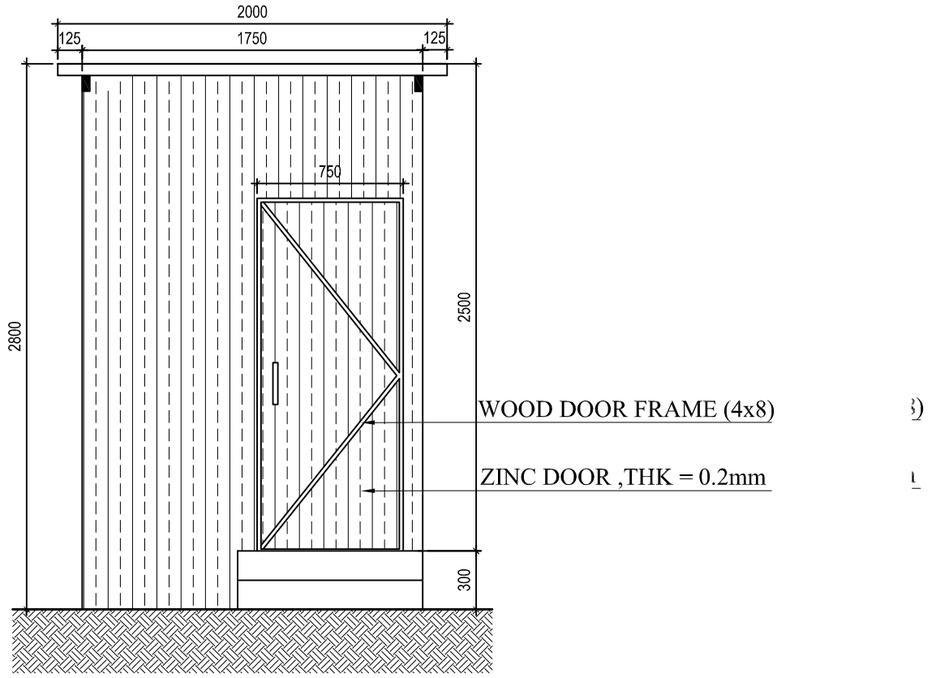
VOLUME II: DESIGNED DRAWINGS

CONSTRUCTION OF .....

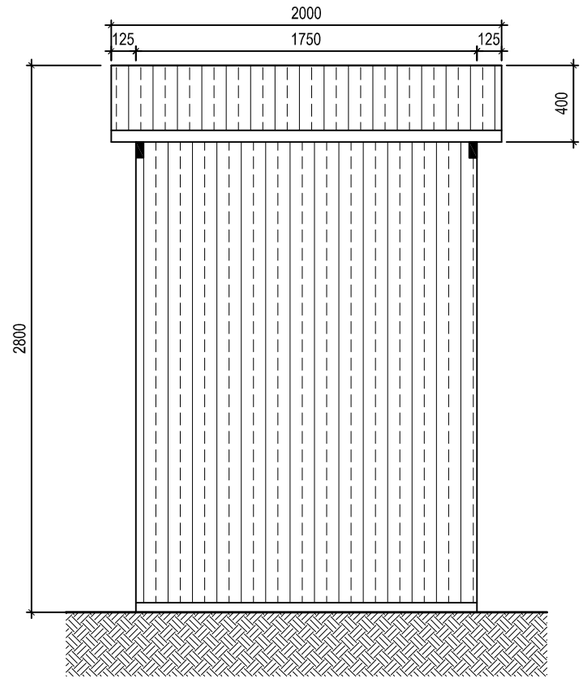
NOVEMBER 2019

ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន
Community Mobilization and Environmental Improvement CMEI

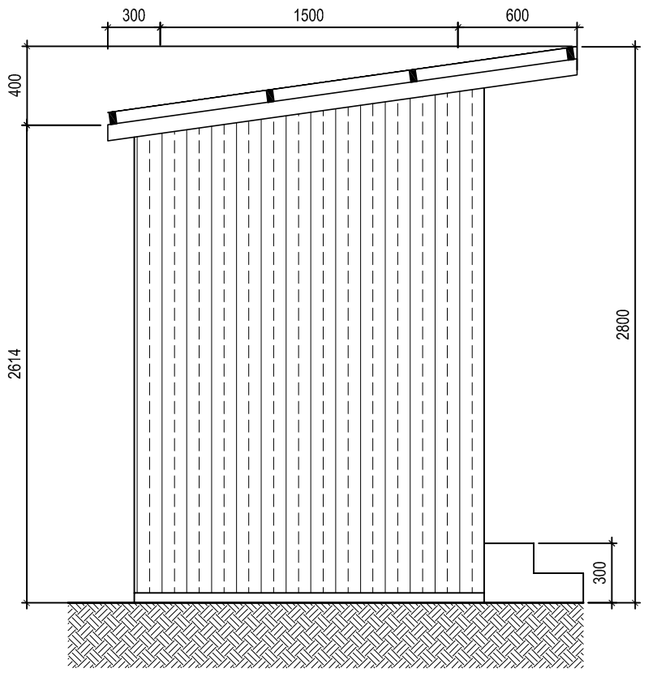
padek artnership for Development in Kampuchea in association with WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership



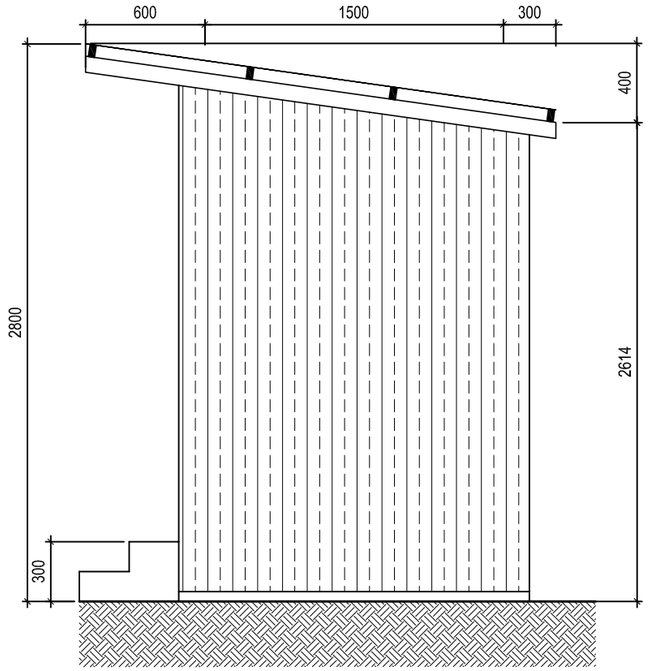
FRONT PLAN VIEW



BACK PLAN VIEW

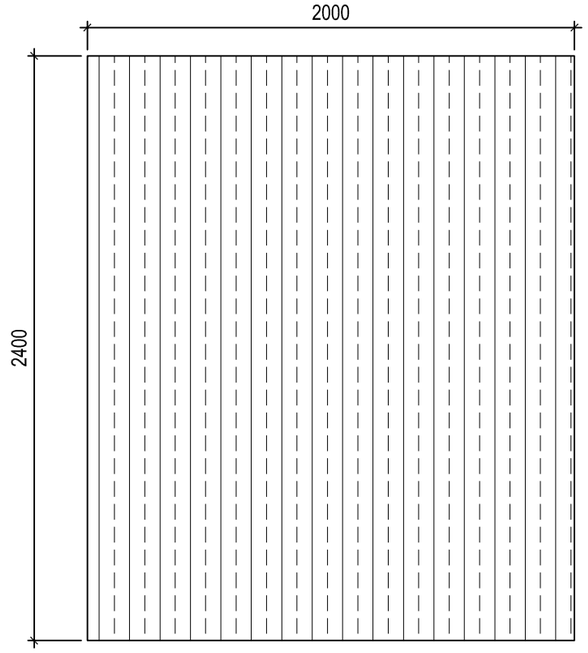


RIGHT PLAN VIEW

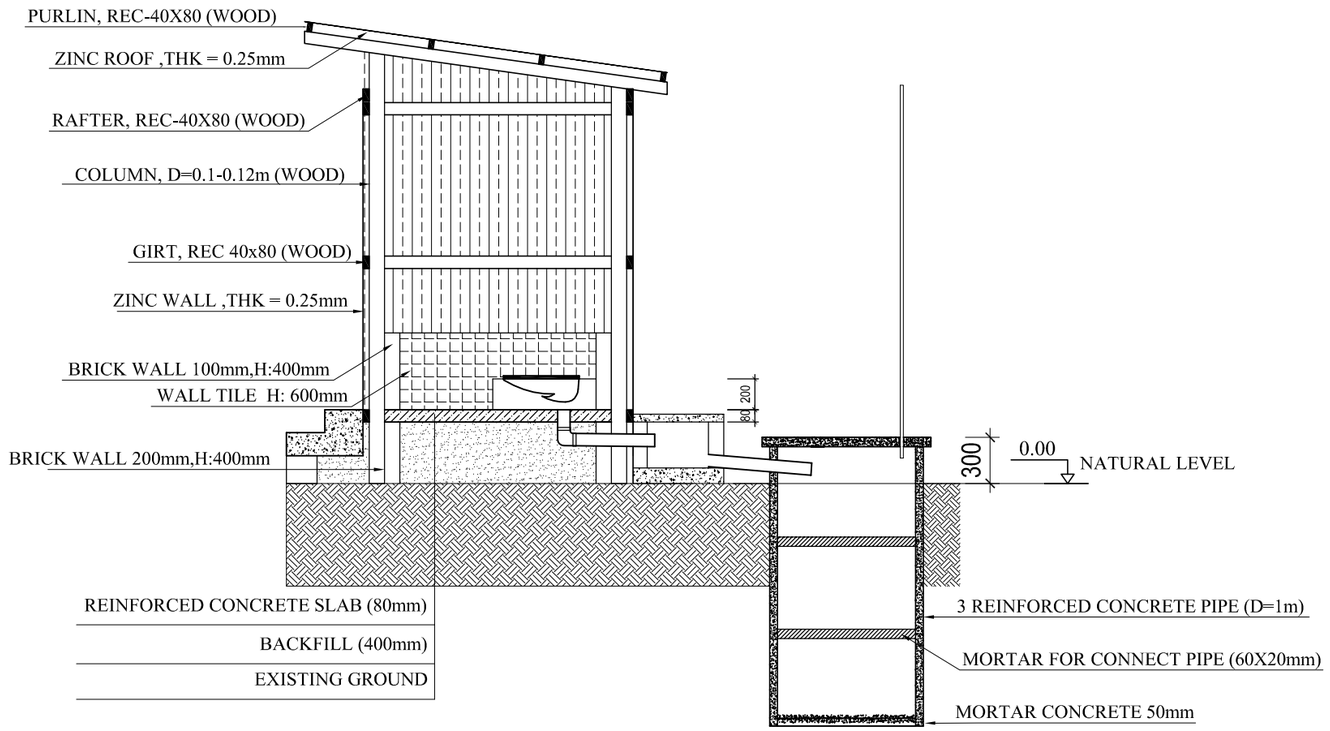


LEFT PLAN VIEW

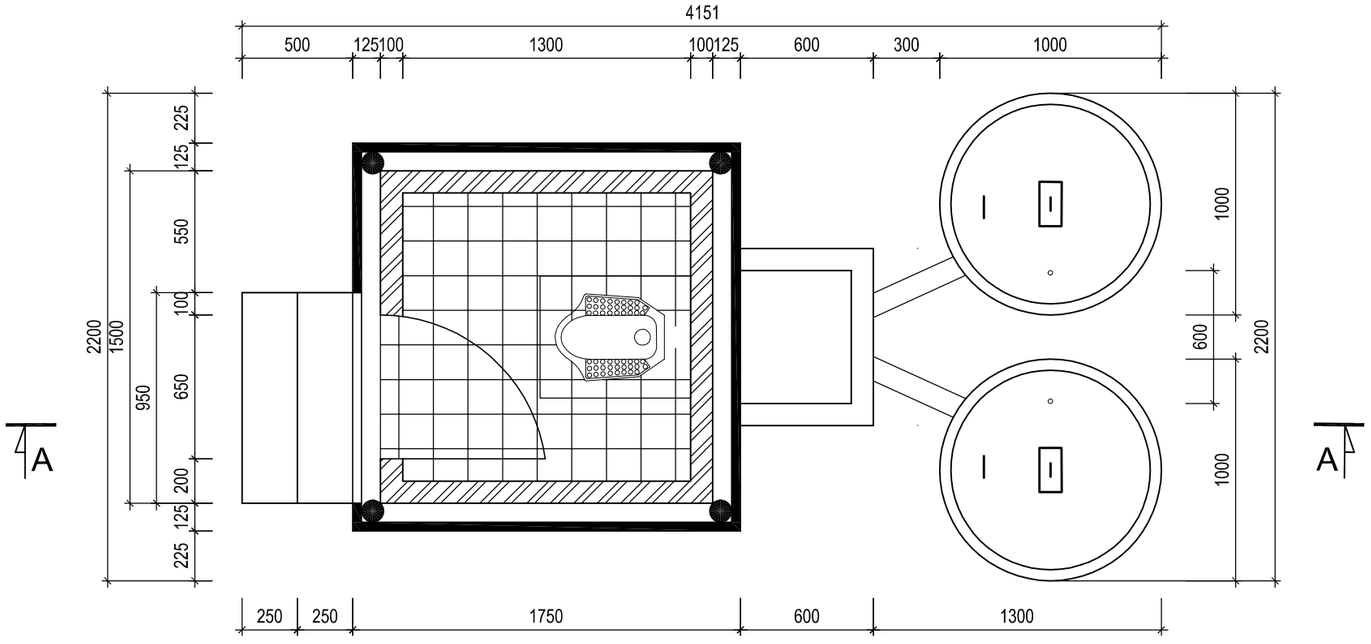
ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន Community Mobilization and Environmental Improvement CMEI; pact Partnership for Development in Kampuchea; in association with WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership	DRAWN BY:	VETH VOEUN		KINGDOM OF CAMBODIA; MINISTRY OF PUBLIC WORKS AND TRANSPORT	SUBMITTED BY: DIPANKAR CHYAU PATNAIK	REV.	DESCRIPTION	DATE	PROJECT: Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)	SCALE: AS SHOWN
	DESIGNED BY:	VETH VOEUN			APPROVED BY: VONG PISITH PROJECT DIRECTOR	1				
	CHECKED BY:	DIPANKAR CHYAU PATNAIK			DATE:	2			DRAWING TITLE:	DRAWING NO.
						3				
						4				
						5				



ROOF PLAN VIEW



SECTION A-A PLAN VIEW



NOTES:

1- LOCATION OF SEPTIC TANK SHALL BE ADJUSTED BASED ON ACTUAL SITE CONDITION
2- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED
3- CONCRETE CLASS SHALL BE
LEAN CONCRETE 15MPa
STRUCTURE PART 25MPa
4- CLEAR COVER TO REINFORCEMENT SHALL BE CAST AGAINST GROUND 50mm AND AIR FACE 25mm
5- ALL REINFORCEMENT TO BE HOT ROLLED GRADE 400 DEFORMED BAR TO AASHTO M31-M-86
6- MINIMUM REINFORCEMENT LAP TO BE 30 BAR DIAMETERS
7- LOCATION OF LAP TO BE APPROVED BY ENGINEER.

ទេសាភិបាលនៃ និងការកែលម្អបរិស្ថាន Community Mobilization and Environmental Improvement CMEI | padek partnership for Development in Kampuchea | In association with WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership

DRAWN BY:	VETH VOEUN	
DESIGNED BY:	VETH VOEUN	
CHECKED BY:	DIPANKAR CHYAU PATNAIK	

KINGDOM OF CAMBODIA
MINISTRY OF PUBLIC WORKS AND TRANSPORT

SUBMITTED BY:
DIPANKAR CHYAU PATNAIK

APPROVED BY:
VONG PISITH
PROJECT DIRECTOR

DATE:

REV.	DESCRIPTION	DATE
1		
2		
3		
4		
5		

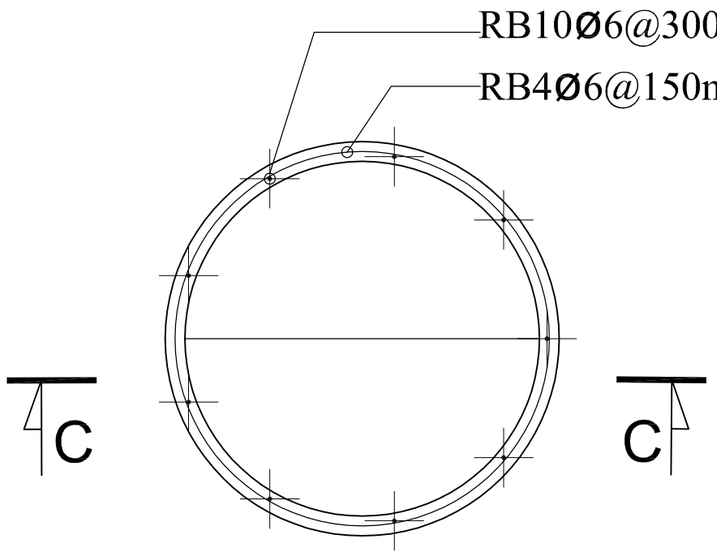
PROJECT: Integrated Urban Environment Management in the Tonle Sap Basin Project
ADB Grant: 0454-CAM(SCF)

SCALE: AS SHOWN

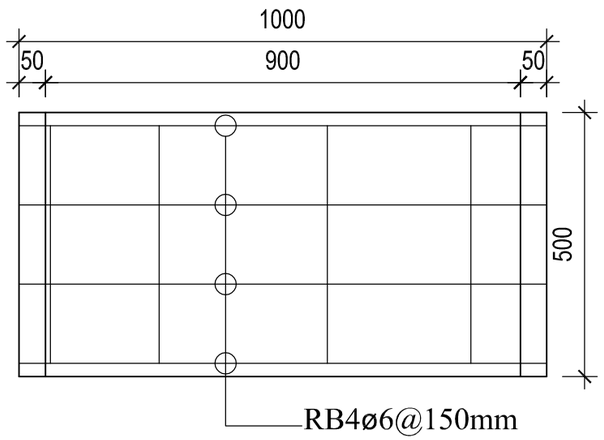
DRAWING TITLE:

DRAWING NO.

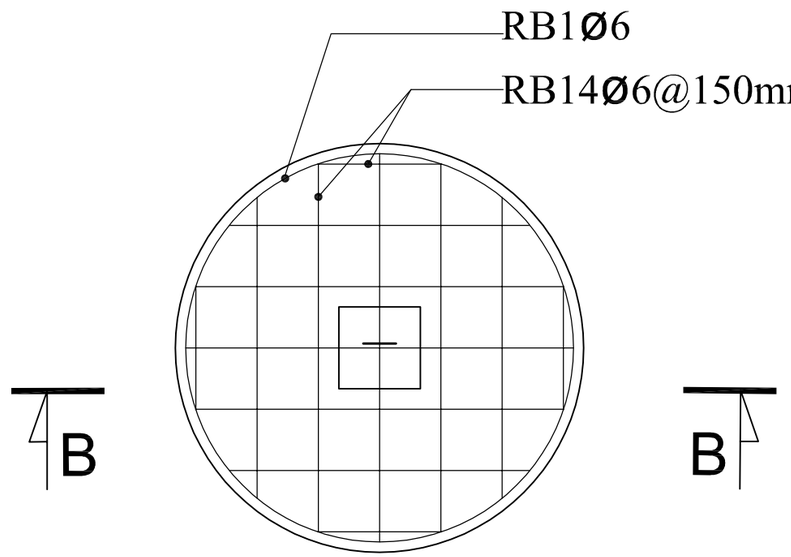
DETAIL REINFORCEMENT FOR RC PIPE AND COVER



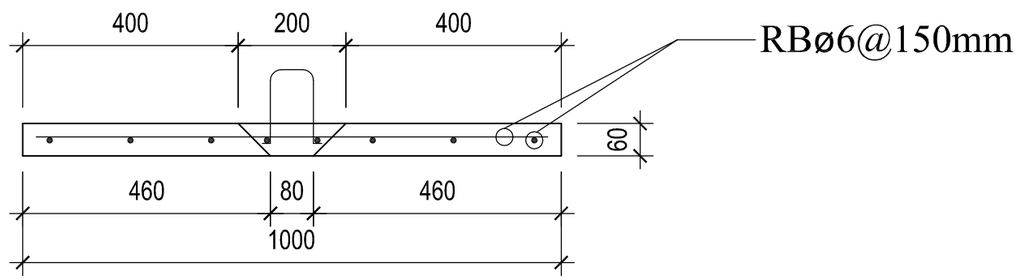
CONCRETE RING



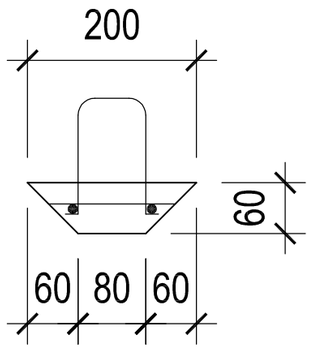
SECTION C-C PLAN VIEW



CONCRETE COVER



SECTION B-B PLAN VIEW



ចលនាសហគមន៍ និងការកែលម្អបរិស្ថាន Community Mobilization and Environmental Improvement CMEI; pcdek partnership for Development in Kampuchea; In association with WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership	DRAWN BY:	VETH VOEUN		KINGDOM OF CAMBODIA MINISTRY OF PUBLIC WORKS AND TRANSPORT	SUBMITTED BY: DIPANKAR CHYAU PATNAIK	REV.	DESCRIPTION	DATE	PROJECT: Integrated Urban Environment Management in the Tonle Sap Basin Project ADB Grant: 0454-CAM(SCF)	SCALE: AS SHOWN
	DESIGNED BY:	VETH VOEUN			APPROVED BY: VONG PISITH PROJECT DIRECTOR	1				
	CHECKED BY:	DIPANKAR CHYAU PATNAIK			DATE:	2			DRAWING TITLE:	DRAWING NO.
						3				
						4				
						5				

Kosh- Toul Makak Table of data collection- VillageLevel-20-Nov-2019

No	Villages	Number of Household head	Widow Household head	Number of Popularion	Male	Female	Physically Challenged	Number of Infant and young			Disabled person	ID Poor-1	ID Poor-2	Any Other Information
								0-5year	6-11year	12-17year				
1	Kosh Village	242	N/A	1011	507	504	N/A	118	138	98	1	25	17	
2	Toul Mkak Village	377	81	1598	711	887	N/A			526	59	23	29	
	Total	**619**	**81**	**2609**	**1218**	**1391**	**0**	**118**	**138**	**624**	**60**	**48**	**46**	

Explaination for Kosh Village ::

+ The previous Total family in Kosh village was 228 Families, but now is increased 14 families because they just got maried and decided from their parents(New total 242 families)

+ The previous total population 994 persons, 534 female and 460 males, but now is increased 17 persons because they got new baby brons (new total 1011 fpersons , 507male and 504females.

For the detailed of total population list wasn't updated yet because the previous village was passesd awy and new village chief is apponted pempory ,but didn't have the public anaounce with referent docment as official yet, so all the dtailed data list we still using the previous one because the village data documents were not clear in hand with new village chief and it is still in the proceeding to prepare new docments, after that the new village chief will provide us.

+The total ID poor1 and Poor2 we recieved data from coomune councilors 60 HHs (Poor1=39, Poor2=21) but the directed reviewed with household to household we got 42 ID Poor only (Poor1=25HHs, Poor2=17 HHs, other 18 HHs of ID ppor1 and Poor2 were migated to the neibor countries and lmoved out without information to village authorities).

For the detailed of total population list wasn't updated yet because the actual number of Population in the villages was collected by village authorities , but the new reviewing population recently can not recognize officially because the referent docments are not yet, in his hand so all the dtailed data list we still using the previous one because the village data documents were not clearred in village chief and it is still in the proceeding to prepare new docments, after that the new village data will provide us.

+Explanation Toulmakak village

-The previous Total family in Toul Makak village was 363 Families, but now is increased 14 families because they just got maried and decided from their parents(New total 377families)

+ The previous total population 1466 persons, 755 female and 711 males, but now is increased persons because they got new baby brons (new total 1598 fpersons , 887 female and 711males.

+The total ID poor1 and Poor2 we recieved data from coomune councilors 88 HHs (Poor1=43 Poor2=45) but the directed reviewed with household to household we got 52ID Poor only (Poor1=23HHs, Poor2=29 HHs, other 36 HHs of ID ppor1 and Poor2 and within 36 was not cleared , amongst 36 HHs , there were 4 died, 7 HHs moved out and 25 HHs other were migrated to the neibor countries without information to village authorities).

For the detailed of total population list wasn't updated yet because the actual number of Population in the villages was collected by village authorities , but the new reviewing population recently can not recognize officially because the referent docments are not yet, in his hand so all the dtailed data list we still using the previous one because the village data documents were not clearred in

Village level Data Set

Individual Household Head Information								Information about the Family													
No	Villages	Name-Household head	Nationality	Age	Male	Female	Physically Challenged	Family Size	Male	Female	Infant and Young Childe n (0-4)	Childre n (5-16)	Disabl ed person	ID Poor-1	ID Poor-2	Any Other Information	Have Toilet	Have legal land		Have land for toilet	Live with Relative
																		Have Licience	Non Licience		
1	Kaoh	Nhoek Phin	Cambodian	38	Yes		No	4	2	2	0	2									
2	Kaoh	Moul Sinsovandany	Cambodian	37	Yes		No	5	4	1	0	2									
3	Kaoh	Dong Kimnaiy	Cambodian	60	Yes		No	7	4	3	0	2									
4	Kaoh	Thou Pen	Cambodian	58	Yes		No	8	3	5	0	1									
5	Kaoh	Kuy Rom	Cambodian	39	Yes		No	4	1	3	0	2									
6	Kaoh	Un Khat	Cambodian	71		Yes	No	5	3	2	0	0									
7	Kaoh	Hin Mong	Cambodian	79	Yes		No	6	4	2	0	3			Yes		Yes	Yes			
8	Kaoh	Sorn Sarorn	Cambodian	66	Yes		No	7	5	2	0	0									
9	Kaoh	Yem Tunh	Cambodian	36	Yes		No	4	2	2	0	2		Yes			No		No	Yes	Father
10	Kaoh	Kong Lina	Cambodian	41	Yes		No	6	2	4	0	2									
11	Kaoh	Hem Sokhoeun	Cambodian	39		Yes	No	2	0	2	0	1		Yes			No		No	No	Brother
12	Kaoh	Uon Samol	Cambodian	36	Yes		No	4	1	3	0	2									
13	Kaoh	Uon Samoeurn	Cambodian	77	Yes		No	5	3	2	0	1									
14	Kaoh	Kan Loeurm	Cambodian	63		Yes	No	4	2	2	0	0			Yes		No	Yes		Yes	
15	Kaoh	Ngin Saohy	Cambodian	65	Yes		No	5	1	4	0	0									
16	Kaoh	Tep Youn	Cambodian	54	Yes		No	5	3	2	0	0									
17	Kaoh	Pen Sot	Cambodian	88	Yes		No	4	2	2	0	0									
18	Kaoh	Pen Savuth	Cambodian	52	Yes		No	6	5	1	0	0									
19	Kaoh	Pum Phearin	Cambodian	46	Yes		No	6	4	2	0	0									
20	Kaoh	Chhen Mao	Cambodian	45	Yes		No	4	2	2	0	1									
21	Kaoh	Leng Channary	Cambodian	45		Yes	No	5	3	2	0	1									
22	Kaoh	Phorn Leakena	Cambodian	28		Yes	No	2	0	2	0	1									
23	Kaoh	Chhou Yan	Cambodian	43	Yes		No	7	3	4	0	1									
24	Kaoh	Chhou Bunthoeurn	Cambodian	61		Yes	No	1	0	1	0	0									
25	Kaoh	Pen Kimnhoeurn	Cambodian	32	Yes		No	4	2	2	0	2									
26	Kaoh	Thoem Mao	Cambodian	44	Yes		No	4	2	2	0	0		Yes			No		No	Yes	Mother
27	Kaoh	Chea Sung	Cambodian	39	Yes		No	5	1	4	0	1		Yes			Yes	Yes			Broken
28	Kaoh	Chea Chos	Cambodian	69		Yes	No	2	0	2	0	0									
29	Kaoh	Chhoeurng Vuth	Cambodian	31	Yes		No	4	3	1	0	2		Yes			No		No	Yes	Father
30	Kaoh	Long Pov	Cambodian	27	Yes		No	4	2	2	0	2		Yes			No		No	Yes	Mother
31	Kaoh	Vay Soeurm	Cambodian	61	Yes		No	4	3	1	0	1									

No	Villages	Name-Household head	Nationality	Age	Male	Female	Physically Challenged	Family Size	Male	Female	Infant and Young Childe n (0-4)	Childre n (5-16)	Disabl ed person	ID Poor-1	ID Poor-2	Any Other Information	Have Toilet	Have legal land		Have land for toilet	Live with Relative
																		Have Licience	Non Licience		
32	Kaoh	Keo Chanly	Cambodian	54	Yes		No	7	4	3	0	0									
33	Kaoh	Kuy Leng	Cambodian	54	Yes		No	6	4	2	0	1									
34	Kaoh	Soem Seng An	Cambodian	34	Yes		No	3	1	2	0	1									
35	Kaoh	Chhoem Sisovatha	Cambodian	47	Yes		No	1	1	0	0	0									
36	Kaoh	Soeur Sovina	Cambodian	38	Yes		No	3	2	1	0	1									
37	Kaoh	Soeur Savong	Cambodian	68	Yes		No	7	5	2	0	0			Yes	ដីបងឲ្យនៅ	No		No	Yes	
38	Kaoh	Hong Ny	Cambodian	71		Yes	No	7	2	5	0	0									
39	Kaoh	Meas Pob	Cambodian	64		Yes	No	6	2	4	0	0									
40	Kaoh	Choeb Chuon	Cambodian	26	Yes		No	2	1	1	0	0		Yes		ID Card Choeb Chuon	No		No	Yes	Mother
41	Kaoh	Nhem Mao	Cambodian	61		Yes	No	3	1	2	0	0		Yes			Yes		No	Yes	Brother
42	Kaoh	Kim Choeurn	Cambodian	57	Yes		No	5	2	3	0	1									
43	Kaoh	Tann Chanthy	Cambodian	34		Yes	No	2	0	2	0	1									
44	Kaoh	San Proeurn	Cambodian	60	Yes		No	6	4	2	0	0									
45	Kaoh	Thorng Channa	Cambodian	30		Yes	No	2	0	2	0	1									
46	Kaoh	Thou Yorn	Cambodian	71		Yes	No	4	1	3	0	1									
47	Kaoh	Soeurn San	Cambodian	49	Yes		No	5	3	2	0	0									
48	Kaoh	Prak Sitha	Cambodian	71	Yes		No	5	2	3	0	0									
49	Kaoh	Mork Choeurn	Cambodian	50	Yes		No	4	2	2	0	1									
50	Kaoh	Khut Marady	Cambodian	36	Yes		No	5	3	2	0	0									
51	Kaoh	An Chanvirak	Cambodian	35	Yes		No	4	3	1	0	1									
52	Kaoh	Dou Heng	Cambodian	70	Yes		No	6	3	3	0	0									
53	Kaoh	Phan Phang	Cambodian	41	Yes		No	3	1	2	0	1									
54	Kaoh	Khuon Chork	Cambodian	66	Yes		No	4	1	3	0	2									
55	Kaoh	Khuon Sovan	Cambodian	69	Yes		No	3	1	2	0	1									
56	Kaoh	Khuon Savy	Cambodian	33	Yes		No	2	2	0	0	1									
57	Kaoh	Duong Kimhuon	Cambodian	38	Yes		No	5	4	1	0	3		Yes		ដីចំណីស្ទឹង	No		No	No	
58	Kaoh	Thou Poch	Cambodian	45	Yes		No	7	3	4	0	3			Yes		No		No	Yes	Mother
59	Kaoh	Sieng Sun	Cambodian	55	Yes		No	2	2	0	0	0									
60	Kaoh	Chamreun Chetra	Cambodian	28	Yes		No	4	2	2	0	2			Yes		No	Yes		Yes	
61	Kaoh	Samreth Bunthan	Cambodian	55	Yes		No	5	2	3	0	2			Yes		No	Yes		Yes	
62	Kaoh	Ou Suy	Cambodian	59	Yes		No	2	1	1	0	0			Yes		Yes	Yes			
63	Kaoh	Rik Pov	Cambodian	33	Yes		No	2	1	1	0	0									
64	Kaoh	Sang Soeurm	Cambodian	35	Yes		No	4	2	2	0	0									

No	Villages	Name-Household head	Nationality	Age	Male	Female	Physically Challenged	Family Size	Male	Female	Infant and Young Childe n (0-4)	Childre n (5-16)	Disabl ed person	ID Poor-1	ID Poor-2	Any Other Information	Have Toilet	Have legal land		Have land for toilet	Live with Relative
																		Have Licience	Non Licience		
65	Kaoh	Pho Chansok	Cambodian	38	Yes		No	5	2	3	0	3		Yes			No		No	Yes	Father
66	Kaoh	Chhouk Sam	Cambodian	78		Yes	No	1	0	1	0	0		Yes		ដីគេឲ្យនៅ	No		No	No	
67	Kaoh	Nhoek Uon	Cambodian	74	Yes		No	4	3	1	0	0									
68	Kaoh	Suon Savat	Cambodian	44	Yes		No	3	2	1	0	1									
69	Kaoh	Khun Chanra	Cambodian	37	Yes		No	5	2	3	0	2									
70	Kaoh	An Huoy	Cambodian	88		Yes	No	2	1	1	0	0			Yes		No	Yes		Yes	
71	Kaoh	Ouk Sisovat	Cambodian	34	Yes		No	3	2	1	0	1			Yes		No	Yes		Yes	
72	Kaoh	Nhoek Sam Art	Cambodian	35	Yes		No	4	2	2	0	2									
73	Kaoh	Ven Kimny	Cambodian	72		Yes	No	2	1	1	0	0		Yes			No	Yes		Yes	
74	Kaoh	Saom Sokchea	Cambodian	49	Yes		No	6	3	3	0	1									
75	Kaoh	Ouk Sophal	Cambodian	50	Yes		No	6	4	2	0	1									
76	Kaoh	Khun Vet	Cambodian	60	Yes		No	5	2	3	0	0									
77	Kaoh	Suon Thou	Cambodian	67		Yes	No	7	2	5	0	0									
78	Kaoh	Hin Nhen	Cambodian	60	Yes		No	4	2	2	0	0									
79	Kaoh	Mout Sokha	Cambodian	39	Yes		No	5	2	3	0	3			Yes		Yes		No		Mother
80	Kaoh	Sin Sien	Cambodian	63		Yes	No	7	3	4	0	0									
81	Kaoh	Loem Khat	Cambodian	80		Yes	No	6	2	4	0	0									
82	Kaoh	Phorn Sunny	Cambodian	39	Yes		No	7	2	5	0	1									
83	Kaoh	Phorn Sokna	Cambodian	36	Yes		No	4	3	1	0	2									
84	Kaoh	Keo Rorn	Cambodian	38	Yes		No	5	2	3	0	3									
85	Kaoh	Phuon Chanthan	Cambodian	32	Yes		No	3	2	1	0	1									
86	Kaoh	Hoeurng Chhil	Cambodian	30	Yes		No	4	3	1	0	2									
87	Kaoh	Pav Vutha	Cambodian	35	Yes		No	5	3	2	0	3									
88	Kaoh	Oem Leakena	Cambodian	33	Yes		No	3	2	1	0	1									
89	Kaoh	Tip Morn	Cambodian	67		Yes	No	3	1	2	0	0									
90	Kaoh	Hem Bo	Cambodian	79		Yes	No	2	0	2	0	1		Yes		ដីគេឲ្យនៅ	No		No	Yes	
91	Kaoh	Khaiy Chamreun	Cambodian	48	Yes		No	5	3	2	0	1									
92	Kaoh	Nou Pharin	Cambodian	54		Yes	No	5	0	5	0	0									
93	Kaoh	Hun Mech	Cambodian	45	Yes		No	5	2	3	0	1									
94	Kaoh	Meun Chek	Cambodian	47	Yes		No	7	3	4	0	1									
95	Kaoh	Mouk Tang	Cambodian	90	Yes		No	2	1	1	0	0									
96	Kaoh	Kong Boeurn	Cambodian	60		Yes	No	4	1	3	0	1									
97	Kaoh	Vay Morn	Cambodian	35	Yes		No	4	3	1	0	2									

No	Villages	Name-Household head	Nationality	Age	Male	Female	Physically Challenged	Family Size	Male	Female	Infant and Young Childen (0-4)	Children (5-16)	Disabled person	ID Poor-1	ID Poor-2	Any Other Information	Have Toilet	Have legal land		Have land for toilet	Live with Relative
																		Have Licience	Non Licience		
98	Kaoh	Tip Samel	Cambodian	64	Yes		No	5	2	3	0	0									
99	Kaoh	Nuth Chansopheak	Cambodian	37	Yes		No	4	2	2	0	2									
100	Kaoh	Touch Bunthoeurn	Cambodian	42	Yes		No	7	5	2	0	4		Yes			No	Yes		Yes	
101	Kaoh	Saom Heun	Cambodian	69	Yes		No	4	1	3	0	0									
102	Kaoh	Chhouk Soy	Cambodian	35	Yes		No	3	2	1	0	1									
103	Kaoh	Keo Ren	Cambodian	84	Yes		No	3	1	2	0	0									
104	Kaoh	Meng Haiy	Cambodian	28	Yes		No	3	1	2	0	1									
105	Kaoh	Ya Chanrith	Cambodian	35	Yes		No	5	4	1	0	2									
106	Kaoh	Mach Ratha	Cambodian	49	Yes		No	6	3	3	0	0									
107	Kaoh	Keo Roeurn	Cambodian	82	Yes		No	2	1	1	0	0									
108	Kaoh	Nov Kimyong	Cambodian	65		Yes	No	6	4	2	0	1									
109	Kaoh	Long Phanna	Cambodian	64		Yes	No	7	2	5	0	0									
110	Kaoh	Chhen Sun	Cambodian	80		Yes	No	4	1	3	0	0									
111	Kaoh	Kaoh Ky	Cambodian	56	Yes		No	6	3	3	0	1			Yes		No	Yes		Yes	
112	Kaoh	Chuon Noeurn	Cambodian	66	Yes		No	4	1	3	0	0			Yes		No	Yes		Yes	
113	Kaoh	Pech Sam Art	Cambodian	56	Yes		No	7	6	1	0	1									
114	Kaoh	Sao Kimyorn	Cambodian	68		Yes	No	3	1	2	0	0		Yes			No	Yes		Yes	
115	Kaoh	Kim Simon	Cambodian	76		Yes	No	1	0	1	0	0									
116	Kaoh	Top Chhon	Cambodian	65	Yes		No	4	2	2	0	0									
117	Kaoh	Ven Chheat	Cambodian	38	Yes		No	4	3	1	1	1									
118	Kaoh	Thoem Sok	Cambodian	59	Yes		No	6	3	3	0	0									
119	Kaoh	Cheab Peng	Cambodian	64	Yes		No	3	1	2	0	0									
120	Kaoh	Leng Vichet	Cambodian	36	Yes		No	3	1	2	0	1									
121	Kaoh	Hin Saren	Cambodian	57	Yes		No	6	3	3	0	1									
122	Kaoh	Nget Phalla	Cambodian	43	Yes		No	5	1	4	1	0									
123	Kaoh	Hich Kimpoy	Cambodian	32	Yes		No	3	2	1	0	1		Yes			No		No	Yes	
124	Kaoh	Chum Sarorn	Cambodian	58	Yes		No	6	3	3	0	0									
125	Kaoh	Sam Sitha	Cambodian	57		Yes	No	3	1	2	0	0	1								
126	Kaoh	Doem Chanthy	Cambodian	29		Yes	No	4	2	2	0	2		Yes			Yes		No	Yes	Mother
127	Kaoh	Sam Leab	Cambodian	67		Yes	No	2	1	1	0	0									
128	Kaoh	Mann Chanthy	Cambodian	35	Yes		No	4	1	3	0	2									
129	Kaoh	Loem Channa	Cambodian	53	Yes		No	4	3	1	0	0									
130	Kaoh	Bun Chhuon	Cambodian	86		Yes	No	4	2	2	0	0									

No	Villages	Name-Household head	Nationality	Age	Male	Female	Physically Challenged	Family Size	Male	Female	Infant and Young Childe n (0-4)	Childre n (5-16)	Disabl ed person	ID Poor-1	ID Poor-2	Any Other Information	Have Toilet	Have legal land		Have land for toilet	Live with Relative
																		Have Licience	Non Licience		
131	Kaoh	Chan Vorn	Cambodian	60	Yes		No	6	3	3	0	0									
132	Kaoh	Nov Sopheap	Cambodian	65		Yes	No	3	1	2	0	0									
133	Kaoh	Chum Savat	Cambodian	56	Yes		No	5	2	3	0	1									
134	Kaoh	Soeur Mit	Cambodian	87	Yes		No	3	2	1	0	0		Yes		បានផ្ទេរសិទ្ធិឲ្យកូន	No	Yes		Yes	
135	Kaoh	Mit Samet	Cambodian	38	Yes		No	5	3	2	0	3									
136	Kaoh	Pech Em	Cambodian	67	Yes		No	3	2	1	0	0									
137	Kaoh	Oem Raksmey	Cambodian	45	Yes		No	5	1	4	0	1									
138	Kaoh	Chuon Noeurn	Cambodian	49	Yes		No	6	3	3	0	2									
139	Kaoh	Reth Sarat	Cambodian	37	Yes		No	4	2	2	0	2									
140	Kaoh	Kong Yoem	Cambodian	78		Yes	No	2	1	1	0	0									
141	Kaoh	Tuon Sophearin	Cambodian	33	Yes		No	4	1	3	0	2									
142	Kaoh	Lach Choeurn	Cambodian	49	Yes		No	6	1	5	0	2									
143	Kaoh	Sout Dy	Cambodian	45	Yes		No	5	3	2	0	0									
144	Kaoh	Suon Sam Un	Cambodian	48		Yes	No	3	1	2	0	0									
145	Kaoh	Loeng Chrel	Cambodian	88	Yes		No	2	1	1	0	0									
146	Kaoh	Nuth Savin	Cambodian	58	Yes		No	9	8	1	0	3									
147	Kaoh	Phun Veasna	Cambodian	29	Yes		No	3	2	1	0	0									
148	Kaoh	Nuth Savuon	Cambodian	56	Yes		No	6	3	3	0	1			Yes	ID Card Nuth Savuth	No		No	Yes	Mother
149	Kaoh	Phuong Sopheap	Cambodian	57		Yes	No	6	3	3	0	0									
150	Kaoh	Kong Youleng	Cambodian	36	Yes		No	3	2	1	0	1									
151	Kaoh	Sek Kann	Cambodian	58	Yes		No	2	1	1	0	0									
152	Kaoh	Hoeurng Loeurn	Cambodian	64		Yes	No	4	1	3	1	0									
153	Kaoh	Morn Thy	Cambodian	38	Yes		No	5	4	1	1	2									
154	Kaoh	So Sokhum	Cambodian	35	Yes		No	3	1	2	0	1									
155	Kaoh	So Mao	Cambodian	71	Yes		No	5	1	4	0	0									
156	Kaoh	Oeut Chantrea	Cambodian	47	Yes		No	7	4	3	0	3									
157	Kaoh	Tang Hem	Cambodian	81	Yes		No	3	1	2	0	0									
158	Kaoh	Seng Sophy	Cambodian	38	Yes		No	6	2	4	0	2									
159	Kaoh	Mom Chantha	Cambodian	31	Yes		No	3	2	1	0	1		Yes		ID Card Bun Chantha	No	Yes		Yes	
160	Kaoh	Sot Siek	Cambodian	62		Yes	No	3	0	3	0	1			Yes		No	Yes		Yes	
161	Kaoh	Morm Srien	Cambodian	78	Yes		No	2	1	1	0	0									
162	Kaoh	Iv Ly	Cambodian	53	Yes		No	4	3	1	0	2									

No	Villages	Name-Household head	Nationality	Age	Male	Female	Physically Challenged	Family Size	Male	Female	Infant and Young Childe n (0-4)	Childre n (5-16)	Disabl ed person	ID Poor-1	ID Poor-2	Any Other Information	Have Toilet	Have legal land		Have land for toilet	Live with Relative
																		Have Licience	Non Licience		
163	Kaoh	Sorn Poch	Cambodian	53	Yes		No	8	3	5	0	1									
164	Kaoh	Pal Huon	Cambodian	58	Yes		No	3	1	2	0	1									
165	Kaoh	Mao Samnang	Cambodian	37	Yes		No	6	2	4	0	3		Yes			No	Yes		Yes	
166	Kaoh	Keng Porn	Cambodian	66	Yes		No	6	2	4	0	0									
167	Kaoh	Khun Sopheap	Cambodian	39	Yes		No	4	2	2	1	1									
168	Kaoh	Van Soeurb	Cambodian	41	Yes		No	7	1	6	0	1									
169	Kaoh	Heng Ren	Cambodian	60		Yes	No	4	2	2	0	0									
170	Kaoh	Phat Sothyka	Cambodian	59	Yes		No	8	5	3	0	1		Yes		ដីចំណីស្នឹង	No		No	No	
171	Kaoh	Hun Savat	Cambodian	33	Yes		No	3	1	2	0	1									
172	Kaoh	Mut Sopheak	Cambodian	31	Yes		No	7	3	4	0	0									
173	Kaoh	Sout Doeurn	Cambodian	35	Yes		No	3	1	2	1	0									
174	Kaoh	Chhuom Vun	Cambodian	71		Yes	No	1	0	1	0	0		Yes		ដីចំណីស្នឹង	No		No	No	
175	Kaoh	Reth Sitha	Cambodian	33	Yes		No	5	1	4	0	3			Yes	ដីចំណីស្នឹង	No		No	No	
176	Kaoh	Nhunh Chantha	Cambodian	52	Yes		No	5	2	3	0	0		Yes		ដីចំណីស្នឹង	No		No	No	
177	Kaoh	Heng Pich	Cambodian	65		Yes	No	7	4	3	1	0		Yes		ដីចំណីស្នឹង	No		No	No	
178	Kaoh	Chhoem Sien	Cambodian	64	Yes		No	9	2	7	1	1									
179	Kaoh	Poy Poch	Cambodian	30	Yes		No	3	1	2	0	1									
180	Kaoh	Douk Chhoeurn	Cambodian	34	Yes		No	5	2	3	0	3									
181	Kaoh	Kuoy An	Cambodian	68	Yes		No	5	2	3	0	0									
182	Kaoh	Hong Vornith	Cambodian	58	Yes		No	5	1	4	0	1									
183	Kaoh	Nhoem Sophat	Cambodian	38	Yes		No	5	2	3	0	2									
184	Kaoh	Sek Sorn	Cambodian	60		Yes	No	4	0	4	0	2									
185	Kaoh	Tep Sorn	Cambodian	76	Yes		No	6	4	2	0	0									
186	Kaoh	Doem Hon	Cambodian	37	Yes		No	2	1	1	0	0									
187	Kaoh	Horng Savet	Cambodian	40	Yes		No	4	2	2	1	1									
188	Kaoh	Sun Soeun	Cambodian	56	Yes		No	3	2	1	0	0									
189	Kaoh	Keo Sokha	Cambodian	27	Yes		No	4	2	2	1	1			Yes	ដីចំណីស្នឹង	No		No	No	
190	Kaoh	Cheng Than	Cambodian	54	Yes		No	7	3	4	0	1									
191	Kaoh	Iem Eng	Cambodian	65	Yes		No	1	1	0	0	0									
192	Kaoh	Hong Ly	Cambodian	43	Yes		No	6	2	4	0	1									
193	Kaoh	Nhoem Tak	Cambodian	67	Yes		No	5	1	4	0	0									
194	Kaoh	Kong Chanphally	Cambodian	41	Yes		No	6	2	4	1	1									
195	Kaoh	Chorn Siem	Cambodian	38	Yes		No	5	3	2	0	3									

No	Villages	Name-Household head	Nationality	Age	Male	Female	Physically Challenged	Family Size	Male	Female	Infant and Young Childe n (0-4)	Childre n (5-16)	Disabl ed person	ID Poor-1	ID Poor-2	Any Other Information	Have Toilet	Have legal land		Have land for toilet	Live with Relative
																		Have Licience	Non Licience		
196	Kaoh	Toem Thom	Cambodian	83		Yes	No	4	1	3	0	0									
197	Kaoh	Khoem Kimthann	Cambodian	39	Yes		No	3	2	1	0	1									
198	Kaoh	Sin Sinh	Cambodian	65	Yes		No	7	3	4	0	1									
199	Kaoh	Mao Kamsort	Cambodian	37	Yes		No	5	3	2	0	3			Yes	ID Card Mor Kamsort	No		No	Yes	Mother
200	Kaoh	Nhoem Le	Cambodian	81	Yes		No	3	1	2	0	0									
201	Kaoh	Ouk Moeurn	Cambodian	75		Yes	No	1	0	1	0	0									
202	Kaoh	Chan Sophea	Cambodian	31	Yes		No	4	1	3	2	0									
203	Kaoh	Moul Mean	Cambodian	38	Yes		No	6	2	4	1	2									
204	Kaoh	Suong Saravuth	Cambodian	48	Yes		No	6	3	3	0	0									
205	Kaoh	Prak Hary	Cambodian	45		Yes	No	5	2	3	0	2									
206	Kaoh	Phan Phoeurn	Cambodian	39	Yes		No	4	2	2	0	2									
207	Kaoh	Nhoem Tem	Cambodian	48	Yes		No	6	3	3	0	1									
208	Kaoh	Pech Nith	Cambodian	33	Yes		No	5	2	3	0	3									
209	Kaoh	But Sokhum	Cambodian	52		Yes	No	2	1	1	0	0									
210	Kaoh	Chan Pech	Cambodian	28	Yes		No	4	1	3	0	2									
211	Kaoh	Chhoem Sarum	Cambodian	56	Yes		No	4	1	3	0	0									
212	Kaoh	Van Khorn	Cambodian	66	Yes		No	7	2	5	1	1									
213	Kaoh	Mann Kuyse	Cambodian	52	Yes		No	4	2	2	0	0									
214	Kaoh	Sout Roeung	Cambodian	29	Yes		No	3	2	1	1	0									
215	Kaoh	Kong Try	Cambodian	60	Yes		No	2	1	1	0	0									
216	Kaoh	Sao Chan	Cambodian	27	Yes		No	3	1	2	1	0									
217	Kaoh	Sei Sambo	Cambodian	33	Yes		No	5	3	2	2	0									
218	Kaoh	Chuon Siphan	Cambodian	68	Yes		No	4	2	2	0	0									
219	Kaoh	Set Channy	Cambodian	39		Yes	No	4	1	3	0	1									
220	Kaoh	Nhoem Tieng	Cambodian	57	Yes		No	4	1	3	0	0									
221	Kaoh	Phat Sophal	Cambodian	32	Yes		No	3	1	2	1	0									
222	Kaoh	Vong Pov	Cambodian	36	Yes		No	4	2	2	0	2									
223	Kaoh	Set Sokhuoch	Cambodian	36	Yes		No	3	1	2	0	1									
224	Kaoh	Run Ry	Cambodian	39	Yes		No	4	2	2	1	1									
225	Kaoh	Set Lundy	Cambodian	27	Yes		No	3	2	1	1	0									
226	Kaoh	Nuth Sapib	Cambodian	32		Yes	No	2	0	2	1	0		Yes			No		No	Yes	Mother
227	Kaoh	Phan Phoeurn	Cambodian	39	Yes		No	5	3	2	1	2									

No	Villages	Name-Household head	Nationality	Age	Male	Female	Physically Challenged	Family Size	Male	Female	Infant and Young Childen (0-4)	Children (5-16)	Disabled person	ID Poor-1	ID Poor-2	Any Other Information	Have Toilet	Have legal land		Have land for toilet	Live with Relative
																		Have Licience	Non Licience		
228	Kaoh	Nuon Kong	Cambodian	62	Yes		No	4	2	2	0	2									
					180	48		994	460	534	24	198	1	25	17						

NOTE: Total ID Poor 1 and ID Poor 2 in Kosh village 60 HHs, But after verification with the Village population list are less than the HHs that are accurated holding ID Poor cards, The actual numbers of ID Poor holders are 60 HHs, but in the village list is only 44 HHs, it means 16 HHs have not seen in the list. Total ID Poor 2 in the whole village has 21 HHs, but in the actual list has only 17 HHs, it means 4 HHs has not seen in the village list, Total ID Poor 1=39HHs, but in the actual list has 25HHs, it means 14has not seen in the village list(reasons that missed because during the ID poor processing the Headed of Households were absent and other family member did it and not the same name in the village list.

Disable : Has 1 Person

Village level Data Set

Individual Household Head Information								Information about the Family													
No	Villages	Name- Household head	Nationality	Age	Male	Female	Physically Challenged	Family Size	Male	Female	Infant and Young Childen (0-4)	Children (5-16)	Disabled person	ID Poor-1	ID Poor-2	Any Other Information	Have Toilet	Have legal land		Have land for toilet	Live with Relative
																		Have Licience	Non Licience		
1	Toul Makak	Kun Rin	Khmer	46	Yes		NA	10	5	5	0	2									
2	Toul Makak	Keo Chanratana	Khmer	34	Yes		NA	4	2	2	0	2									
3	Toul Makak	Un Chanthorn	Khmer	54		Yes	NA	1	0	1	0	0				WHH					
4	Toul Makak	Mark Chim	Khmer	52		Yes	NA	3	1	2	0	0				WHH					
5	Toul Makak	Kung Rith	Khmer	36	Yes		NA	3	1	2	1	0									
6	Toul Makak	Chhin Chanthou	Khmer	20	Yes		NA	3	1	2	1										
7	Toul Makak	Hun Sina	Khmer	24	Yes		NA	3	2	1	1	0									
8	Toul Makak	Mark Chorn	Khmer	57		Yes	NA	3	1	2	0	0				WHH					
9	Toul Makak	Mark Song	Khmer	30	Yes		NA	5	2	3	1	1									
10	Toul Makak	Kang Moeuk	Khmer	50		Yes	NA	2	1	1	0	0		Yes		WHH	No	Yes		Yes	
11	Toul Makak	Nou Phan	Khmer	78		Yes	NA	1	0	1	0	0				WHH					
12	Toul Makak	Chum Cheat	Khmer	34	Yes		NA	6	3	3	1	1									
13	Toul Makak	Mek Sokrieng	Khmer	34	Yes		NA	4	2	2	1	1									
14	Toul Makak	Chea Vanna	Khmer	56	Yes		NA	7	1	6	1	0									
15	Toul Makak	Keng Lin	Khmer	41	Yes		NA	6	2	4	0	0									
16	Toul Makak	Nop Rina	Khmer	42		Yes	NA	3	1	2	0	0				WHH					
17	Toul Makak	Nop Lady	Khmer	45		Yes	NA	2	1	1	0	0				WHH					
18	Toul Makak	Preum Sokhon	Khmer	48		Yes	NA	3	0	3	0	0				WHH					
19	Toul Makak	Rous Pros	Khmer	50	Yes		NA	5	1	5	0	3			Yes		No		No	No	
20	Toul Makak	Yun Pov	Khmer	51		Yes	NA	4	0	4	0	0				WHH					
21	Toul Makak	Preum Gneul	Khmer	46	Yes		NA	5	2	3	1	2									
22	Toul Makak	Preum Beng	Khmer	32	Yes		NA	5	2	3	3	0									
23	Toul Makak	Noy Phina	Khmer	34	Yes		NA	4	1	3	0	2									
24	Toul Makak	Preum Sophal	Khmer	48	Yes		NA	3	1	2	0	0									
25	Toul Makak	Chim Boeun	Khmer	54	Yes		NA	2	1	1	0	0									
26	Toul Makak	Pream Put	Khmer	63	Yes		NA	4	3	1	0	0									
27	Toul Makak	El Orn	Khmer	33		Yes	NA	2	1	1	1	0				WHH					
28	Toul Makak	Tit Sat	Khmer	58	Yes		NA	1	1	0	0	0									
29	Toul Makak	Noun Toch	Khmer	28	Yes		NA	5	3	2	1	1									
30	Toul Makak	Lot Dina	Khmer	33	Yes		NA	5	3	2	1	1									
31	Toul Makak	Mek Moa	Khmer	70		Yes	NA	2	1	1	0	0		Yes		WHH	No		No	No	
32	Toul Makak	Long Moeun	Khmer	54		Yes	NA	4	2	2	0	0			Yes	WHH	Yes	Yes		Yes	
33	Toul Makak	Chheun Rin	Khmer	26	Yes		NA	2	1	3	2	0									
34	Toul Makak	Oeun Chantha	Khmer	37	Yes		NA	4	2	2	0	2									
35	Toul Makak	Sok Sal	Khmer	22	Yes		NA	3	2	1	0	1									
36	Toul Makak	Heang Pov	Khmer	37	Yes		NA	3	2	1	1	0									
37	Toul Makak	Thlang Nov	Khmer	32	Yes		NA	5	3	2	1	1									
38	Toul Makak	Kang Da	Khmer	31	Yes		NA	3	2	1	0	1									
39	Toul Makak	Kang Morn	Khmer	63		Yes	NA	1	0	1	0	0		Yes		WHH	No	Yes		Yes	
40	Toul Makak	Khai Sokhem	Khmer	64	Yes		NA	2	1	1	0	0									
41	Toul Makak	Tim Phearak	Khmer	24	Yes		NA	3	1	2	1	0									
42	Toul Makak	Tim Pheatra	Khmer	30	Yes		NA	4	2	2	0	1									
43	Toul Makak	Nou Chamnab	Khmer	35	Yes		NA	3	2	1	1	0									
44	Toul Makak	Men Dom	Khmer	30	Yes		NA	5	3	2	1	0									
45	Toul Makak	Ngoun Rith	Khmer	21	Yes		NA	3	2	1	1	0									
46	Toul Makak	Kouy Hout	Khmer	32	Yes		NA	4	2	2	0	1									
47	Toul Makak	Rous Borin	Khmer	25	Yes		NA	3	1	2	1	0									
48	Toul Makak	Mam Oeun	Khmer	34	Yes		NA	5	4	1	0	2									
49	Toul Makak	Noun Bunthoeun	Khmer	50	Yes		NA	6	3	3	0	0									
50	Toul Makak	Noun Bunthorn	Khmer	32	Yes		NA	3	1	2	1	0									
51	Toul Makak	Kun Kosal	Khmer	77	Yes		NA	9	4	5	1	3		Yes			No	Yes		Yes	
52	Toul Makak	Nou Vichet	Khmer	35	Yes		NA	5	4	1	1	2									
53	Toul Makak	Noun Va	Khmer	62		Yes	NA	4	1	3	0	0			Yes	WHH	Yes	Yes		Yes	
54	Toul Makak	Phin Choeun	Khmer	36	Yes		NA	5	3	2	0	3									
55	Toul Makak	Yim Sarath	Khmer	53	Yes		NA	7	4	3	0	0									
56	Toul Makak	Pim Neang	Khmer	61	Yes		NA	3	2	1	0	0									
57	Toul Makak	Hun Hoy	Khmer	33	Yes		NA	4	2	2	1	1									
58	Toul Makak	Gnet Kimsan	Khmer	80	Yes		NA	2	1	1	0	0									
59	Toul Makak	Kong Sitha	Khmer	58	Yes		NA	5	2	3	0	0									
60	Toul Makak	Hor Sarath	Khmer	26	Yes		NA	3	1	2	1	0									
61	Toul Makak	Ket Kreum	Khmer	74		Yes	NA	1	0	1	0	0									
62	Toul Makak	Moa Sarith	Khmer	34	Yes		NA	5	4	1	0	3									
63	Toul Makak	Phath Sochea	Khmer	25		Yes	NA	3	1	2	1	1				WHH					
64	Toul Makak	Seng Sophal	Khmer	59		Yes	NA	3	1	2	1	0				WHH					
65	Toul Makak	Kuch Sros	Khmer	28	Yes		NA	5	3	2	1	2									
66	Toul Makak	Bou Ngoeun	Khmer	64	Yes		NA	3	1	2	0	0									
67	Toul Makak	Hun Thona	Khmer	22	Yes		NA	4	2	2	1	1									
68	Toul Makak	Pream Lim	Khmer	75	Yes		NA	4	2	2	0	0									
69	Toul Makak	Kim Chhang	Khmer	38	Yes		NA	6	3	3	1	3									
70	Toul Makak	Tit Nin	Khmer	76		Yes	NA	1	0	1	0	0		Yes		WHH	Yes	Yes		Yes	
71	Toul Makak	Tim Chhunny	Khmer	34	Yes		NA	3	2	1	0	0									
72	Toul Makak	Ou Ann	Khmer	38	Yes		NA	3	1	2	1	0									
73	Toul Makak	Noy Kosal	Khmer	26	Yes		NA	4	2	2	0	2									
74	Toul Makak	Neang Phoeun	Khmer	53		Yes	NA	1	0	1	0	0				WHH					
75	Toul Makak	Seng Chealeang	Khmer	27	Yes		NA	3	2	1	1	0									
76	Toul Makak	Long Sopheak	Khmer	35	Yes		NA	5	3	2	0	3									
77	Toul Makak	Eang Sil	Khmer	27	Yes		NA	3	2	1	1	0									
78	Toul Makak	Rorng Kruy	Khmer	59		Yes	NA	7	5	2	1	3			Yes	WHH	Yes		No	No	
79	Toul Makak	Thouk Panha	Khmer	30	Yes		NA	5	2	3	1	2		Yes			Yes		No	No	
80	Toul Makak	Eang Sothea	Khmer	48	Yes		NA	5	1	4	0	0									
81	Toul Makak	Chhea Sok	Khmer	41	Yes		NA	6	2	4	2	1									
82	Toul Makak	Lor Sokhoun	Khmer	52		Yes	NA	3	1	2	0	1				WHH					

83	Toul Makak	Chann Sovann	Khmer	67	Yes		NA	3	2	1	0	0									
84	Toul Makak	Morn Samet	Khmer	32	Yes		NA	4	2	2	2	0									
85	Toul Makak	Chort Sarom	Khmer	35	Yes		NA	5	4	1	0	3									
86	Toul Makak	Nov Nob	Khmer	53	Yes		NA	4	3	1	0	0									
87	Toul Makak	Vann Norm	Khmer	43	Yes		NA	5	1	4	0	1									
88	Toul Makak	Chhea Chhorn	Khmer	69	Yes		NA	2	1	1	0	0									
89	Toul Makak	Seng Noun	Khmer	53	Yes		NA	3	1	1	0	0									
90	Toul Makak	Morm Veasna	Khmer	26	Yes		NA	4	2	2	2	0									
91	Toul Makak	Chheab Kung	Khmer	57	Yes		NA	5	2	3	0	1									
92	Toul Makak	Sok Ny	Khmer	71		Yes	NA	4	2	2	0	0				WHH					
93	Toul Makak	Nob Vandet	Khmer	32		Yes	NA	2	0	2	1	0				WHH					
94	Toul Makak	Chea Chin	Khmer	30	Yes		NA	3	2	1	1	0									
95	Toul Makak	Yim Norn	Khmer	67		Yes	NA	2	1	1	0	0				WHH					
96	Toul Makak	Chin Sopheap	Khmer	38		Yes	NA	4	2	2	0	2				WHH					
97	Toul Makak	Sieng Seab	Khmer	52	Yes		NA	6	2	4	0	3									
98	Toul Makak	Kung Sinat	Khmer	60	Yes		NA	8	5	3	0	0									
99	Toul Makak	Men Ton	Khmer	35	Yes		NA	4	2	2	0	2									
100	Toul Makak	Try Nimol	Khmer	28			NA	3	2	1	0	1									
101	Toul Makak	Ngeoun Ngorn	Khmer	37			NA	5	2	3	0	1									
102	Toul Makak	Thai Mark	Khmer	59		Yes	NA	5	4	1	0	0				WHH					
103	Toul Makak	Sam Tai	Khmer	70		Yes	NA	2	0	2	0	0				WHH					
104	Toul Makak	Pek Pim	Khmer	36	Yes		NA	5	3	2	0	3									
105	Toul Makak	Morm Phoeun	Khmer	53	Yes		NA	6	3	3	0	3									
106	Toul Makak	Prum Sophea	Khmer	27	Yes		NA	3	2	1	1	0									
107	Toul Makak	Sieng Mann	Khmer	86		Yes	NA	1	0	1	0	0			Yes	WHH	No	Yes		Yes	
108	Toul Makak	Sok Samoeun	Khmer	62	Yes		NA	1	0	1	0	0									
109	Toul Makak	Uy Rim	Khmer	82		Yes	NA	1	0	1	0	0				WHH					
110	Toul Makak	Long Bora	Khmer	36	Yes		NA	5	3	2	0	3									
111	Toul Makak	Kung Sokhem	Khmer	45	Yes		NA	3	1	2	0	0									
112	Toul Makak	Long Roun	Khmer	43		Yes	NA	3	1	2	0	0				WHH					
113	Toul Makak	Damm Sreng	Khmer	76	Yes		NA	2	1	1	0	0		Yes			No		No	Yes	
114	Toul Makak	Pream Mornh	Khmer	56	Yes		NA	6	3	3	0	3									
115	Toul Makak	Sim Heang	Khmer	60	Yes		NA	12	6	6	1	3									
116	Toul Makak	Ros Bora	Khmer	31	Yes		NA	3	2	1	0	0									
117	Toul Makak	Sok Sam Ath	Khmer	26	Yes		NA	3	1	2	1	0									
118	Toul Makak	Nhem Horn	Khmer	59		Yes	NA	4	3	1	0	0				WHH					
119	Toul Makak	Kung tha Sokly	Khmer	35	Yes		NA	5	3	2	0	3									
120	Toul Makak	Chhoun Chhoeun	Khmer	57	Yes		NA	2	1	1	0	0			Yes	Migrant	No	Yes		Yes	
121	Toul Makak	Kung Soknhanh	Khmer	24	Yes		NA	3	1	2	1	0									
122	Toul Makak	Chann Ra	Khmer	27	Yes		NA	4	2	2	1	0			Yes		No		No	Yes	
123	Toul Makak	Rich Pha	Khmer	29	Yes		NA	4	2	2	2	0									
124	Toul Makak	Kouy Soeun	Khmer	61		Yes	NA	1	0	1	0	0				WHH					
125	Toul Makak	Pech Mith	Khmer	73		Yes	NA	1	0	1	0	0			Yes	WHH	No		No	Yes	
126	Toul Makak	Bin Pov	Khmer	46	Yes		NA	5	4	1	0	1									
127	Toul Makak	Choeung Savai	Khmer	33	Yes		NA	3	2	1	1	0									
128	Toul Makak	Sok Dimang	Khmer	37	Yes		NA	5	3	2	2	1									
129	Toul Makak	Chheun Sothea	Khmer	32	Yes		NA	4	2	2	1	1									
130	Toul Makak	Prim Mon	Khmer	48	Yes		NA	6	3	3	1	1									
131	Toul Makak	Dub Ya	Khmer	30	Yes		NA	7	4	3	2	3									
132	Toul Makak	Lay Sarun	Khmer	39	Yes		NA	5	1	4	0	3									
133	Toul Makak	Pov Leng	Khmer	72	Yes		NA	2	1	1	0	0									
134	Toul Makak	Nhem Kan	Khmer	60		Yes	NA	3	1	2	0	0				WHH					
135	Toul Makak	Chin Ra	Khmer	27	Yes		NA	4	2	2	1	1									
136	Toul Makak	Sun Ang	Khmer	33	Yes		NA	5	3	2	0	3									
137	Toul Makak	Kamsot San	Khmer	27	Yes		NA	4	3	1	0	2									
138	Toul Makak	Nhem Soeum	Khmer	54		Yes	NA	6	3	3	2	0		Yes		WHH	No	Yes		Yes	
139	Toul Makak	Peul Oeun	Khmer	26		Yes	NA	3	0	3	1	1				WHH					
140	Toul Makak	Chhang Phoeun	Khmer	35	Yes		NA	5	2	3	1	1									
141	Toul Makak	Sean Ra	Khmer	36	Yes		NA	4	1	3	0	2									
142	Toul Makak	Sim Ren	Khmer	63		Yes	NA	8	3	5	0	3		Yes			No		No	No	
143	Toul Makak	Thach Phorn	Khmer	61		Yes	NA	4	3	1	0	0									
144	Toul Makak	Sok Pov	Khmer	34	Yes		NA	5	1	4	1	2									
145	Toul Makak	Ear Sun	Khmer	87		Yes	NA	1	0	1	0	0			Yes	WHH	No		No	No	
146	Toul Makak	Keut Thanret	Khmer	50	Yes		NA	8	5	3	0	2									
147	Toul Makak	Nhil Moa	Khmer	29	Yes		NA	3	1	2	1	0									
148	Toul Makak	Chorn Yoeurn	Khmer	48		Yes	NA	1	1	1	1	1	Yes	Yes			No		No	No	
149	Toul Makak	Ty Nhor	Khmer	64		Yes	NA	5	3	2	0	0				WHH					
150	Toul Makak	Moun Bunphorng	Khmer	24	Yes		NA	4	1	3	2	0									
151	Toul Makak	Ka Pov	Khmer	52		Yes	NA	5	2	3	0	0			Yes	WHH	No		No	Yes	
152	Toul Makak	Hean Chamreun	Khmer	31	Yes		NA	4	3	1	1	1		Yes			No		No	Yes	
153	Toul Makak	Chea Muon	Khmer	67	Yes		NA	8	5	3	0	1									
154	Toul Makak	Mang Chantha	Khmer	49	Yes		NA	8	5	3	0	3									
155	Toul Makak	Sen Sokhom	Khmer	45	Yes		NA	4	2	2	0	0									
156	Toul Makak	Norng Hun	Khmer	61		Yes	NA	6	2	4	0	0				WHH					
157	Toul Makak	Krin Mey	Khmer	29	Yes		NA	4	2	2	1	0									
158	Toul Makak	Pum Sopheap	Khmer	38	Yes		NA	8	3	5	1	4									
159	Toul Makak	Sat Soa	Khmer	38	Yes		NA	4	2	2	1	1									
160	Toul Makak	Soun Soeun	Khmer	43	Yes		NA	5	3	2	2	1									
161	Toul Makak	Soun Sanhsarun	Khmer	39	Yes		NA	8	3	5	2	4									
162	Toul Makak	Phuk Sophat	Khmer	31	Yes		NA	5	3	2	0	3									
163	Toul Makak	Nem Samoeun	Khmer	28	Yes		NA	4	2	2	1	1									
164	Toul Makak	Soun Sanhsavy	Khmer	61	Yes		NA	4	3	1	0	1									
165	Toul Makak	Sot Sork	Khmer	58	Yes		NA	5	3	2	0	2			Yes		No	Yes		Yes	
166	Toul Makak	Damm Channet	Khmer	29	Yes		NA	3	1	2	1	0									
167	Toul Makak	Yorng Bota	Khmer	26	Yes		NA	3	1	2	1	0									
168	Toul Makak	Oun Sokhak	Khmer	26	Yes		NA	3	1	2	1	0									
169	Toul Makak	Phoung Sophal	Khmer	29	Yes		NA	5	2	3	1	1									

170	Toul Makak	Doung Mara	Khmer	33	Yes		NA	3	2	1	0	0									
171	Toul Makak	Mek Kann	Khmer	65	Yes		NA	2	1	1	0	0									
172	Toul Makak	Vann Sokha	Khmer	34	Yes		NA	6	4	2	0	4		Yes			No	Yes		Yes	
173	Toul Makak	Oeun Sophea	Khmer	39	Yes		NA	5	2	3	0	3									
174	Toul Makak	Soun Tim	Khmer	61		Yes	NA	1	0	1	0	0			Yes	WHH	Yes	Yes		Yes	
175	Toul Makak	Duch Kosal	Khmer	24	Yes		NA	3	2	1	1	0									
176	Toul Makak	Reth Rith	Khmer	27	Yes		NA	4	2	2	1	1									
177	Toul Makak	Sok Im	Khmer	73		Yes	NA	1	0	1	0	0			Yes	WHH	No	Yes		Yes	
178	Toul Makak	Khath Chanthorn	Khmer	37	Yes		NA	6	2	4	1	3		Yes			No	Yes		Yes	
179	Toul Makak	Men Sophorn	Khmer	38	Yes		NA	8	3	5	1	4		Yes			No	Yes		Yes	
180	Toul Makak	Sam Hut	Khmer	69		Yes	NA	2	0	2	0	0			Yes	WHH	Yes	Yes		Yes	
181	Toul Makak	Choub Nheub	Khmer	64		Yes	NA	6	3	3	0	3									
182	Toul Makak	Phat Sophin	Khmer	38		Yes	NA	5	2	3	1	2			Yes	WHH	No		No	Yes	
183	Toul Makak	Chhum Sinoun	Khmer	48		Yes	NA	2	0	2	0	0				WHH					
184	Toul Makak	Ouch Nga	Khmer	41	Yes		NA	7	2	5	0	3			Yes		No	Yes		Yes	
185	Toul Makak	Ouch Thorn	Khmer	52	Yes		NA	3	1	2	0	0			Yes		No	Yes		Yes	
186	Toul Makak	Pring Choeun	Khmer	36	Yes		NA	7	3	5	2	3									
187	Toul Makak	Kung Saroeun	Khmer	69	Yes		NA	3	1	2	0	1									
188	Toul Makak	Hun Chantha	Khmer	59	Yes		NA	7	5	2	0	1									
189	Toul Makak	Cheng Chann	Khmer	35	Yes		NA	7	5	2	2	3		Yes			Yes	Yes		Yes	
190	Toul Makak	Cheam Pahna	Khmer	27	Yes		NA	4	3	1	2	0									
191	Toul Makak	Men Vathanak	Khmer	55	Yes		NA	4	2	2	0	0									
192	Toul Makak	Phat Phea	Khmer	31	Yes		NA	4	1	3	0	2									
193	Toul Makak	Nob Sim	Khmer	61		Yes	NA	6	2	4	0	3				WHH					
194	Toul Makak	Pov Ravy	Khmer	31	Yes		NA	2	2	0	0	1									
195	Toul Makak	Vann Ream	Khmer	75		Yes	NA	2	1	1	0	0		Yes		WHH	No	Yes		Yes	
196	Toul Makak	Yom Sochy	Khmer	21	Yes		NA	7	3	4	3	2									
197	Toul Makak	Kum Koeun	Khmer	71	Yes		NA	2	2	0	0	0									
198	Toul Makak	Ngoy Kanha	Khmer	22	Yes		NA	3	1	2	1	0									
199	Toul Makak	Brak Sithoeun	Khmer	23	Yes		NA	3	1	2	1	0									
200	Toul Makak	Chhay Vannak	Khmer	55	Yes		NA	7	4	3	0	1									
201	Toul Makak	Sok Oun	Khmer	61		Yes	NA	2	1	1	0	0			Yes	WHH	No	Yes		Yes	
202	Toul Makak	Pork Rin	Khmer	22	Yes		NA	4	3	1	2	0									
203	Toul Makak	Nim Chann	Khmer	31	Yes		NA	7	2	5	0	2									
204	Toul Makak	Keo Lay	Khmer	71		Yes	NA	4	3	1	0	0				WHH					
205	Toul Makak	Horn Theara	Khmer	35		Yes	NA	6	3	3	0	2									
206	Toul Makak	Seng Hak	Khmer	51	Yes		NA	5	3	2	0	1									
207	Toul Makak	Prum Phearen	Khmer	46	Yes		NA	3	1	2	1	1									
208	Toul Makak	Set Neul	Khmer	55	Yes		NA	4	2	2	0	0									
209	Toul Makak	Yoeun Sophorn	Khmer	38	Yes		NA	6	3	3	1	3									
210	Toul Makak	Nget Khoeun	Khmer	57	Yes		NA	7	4	3	0	1			Yes		No		No	Yes	
211	Toul Makak	Sieng Muth	Khmer	78		Yes	NA	1	0	1	0	0		Yes		WHH	No		No	Yes	
212	Toul Makak	Yim Yeunn	Khmer	48	Yes		NA	4	2	2	0	1			Yes		No	Yes		Yes	
213	Toul Makak	Vun Saveat	Khmer	27	Yes		NA	2	1	1	0	0									
214	Toul Makak	Ouch Da	Khmer	57	Yes		NA	5	2	3	1	0									
215	Toul Makak	Nin Yang	Khmer	78		Yes	NA	1	0	1	0	0				WHH					
216	Toul Makak	Soa Sok	Khmer	27	Yes		NA	2	1	1	0	0									
217	Toul Makak	Sous Chantha	Khmer	60		Yes	NA	1	0	1	0	0	Yes	Yes		WHH	Yes		No	No	
218	Toul Makak	Yous Sarath	Khmer	37	Yes		NA	6	4	2	1	1									
219	Toul Makak	Na Sokha	Khmer	39		Yes	NA	5	5	0	0	2				WHH					
220	Toul Makak	Uy Liboeun	Khmer	57	Yes		NA	3	1	2	0	1			Yes		No		No	No	
221	Toul Makak	Im Rithy	Khmer	35	Yes		NA	6	1	5	2	1									
222	Toul Makak	Rin Sarom	Khmer	36	Yes		NA	4	2	2	1	1									
223	Toul Makak	Im Vutha	Khmer	31	Yes		NA	5	4	1	2	1									
224	Toul Makak	Neang Vunn	Khmer	54	Yes		NA	3	2	1	0	1									
225	Toul Makak	Heab Pros	Khmer	27	Yes		NA	3	2	1	1	0									
226	Toul Makak	Yeang Sinoun	Khmer	43	Yes		NA	5	1	4	0	1									
227	Toul Makak	Sum Soy	Khmer	22	Yes		NA	4	1	3	2	0									
228	Toul Makak	Mann Sopheab	Khmer	53		Yes	NA	5	2	3	0	3			Yes	WHH	Yes		No	No	
229	Toul Makak	Ngin Ngoun	Khmer	20	Yes		NA	3	1	2	0	1									
230	Toul Makak	Pov No	Khmer	31	Yes		NA	4	2	2	1	1									
231	Toul Makak	Heung Noeun	Khmer	28	Yes		NA	4	2	2	1	1									
232	Toul Makak	Yim Mon	Khmer	38	Yes		NA	5	3	2	1	2									
233	Toul Makak	Touch Himsun	Khmer	84		Yes	NA	3	1	2	0	0			Yes	WHH	Yes	Yes		No	
234	Toul Makak	Y Neang	Khmer	69		Yes	NA	5	1	4	1	0				WHH					
235	Toul Makak	Sim Phorn	Khmer	50	Yes		NA	10	5	5	0	3									
236	Toul Makak	Ouk Moa	Khmer	43	Yes		NA	4	3	1	0	0									
237	Toul Makak	Em Kimyan	Khmer	66	Yes		NA	2	2	0	0	0									
238	Toul Makak	Heab Sovann	Khmer	29	Yes		NA	3	2	1	0	0									
239	Toul Makak	Heanb Puthea	Khmer	29	Yes		NA	4	2	2	0	2									
240	Toul Makak	Morm Oun	Khmer	58	Yes		NA	8	4	4	0	0									
241	Toul Makak	Ouk Kimchhen	Khmer	28	Yes		NA	4	2	2	1	1									
242	Toul Makak	Sun Somaiya	Khmer	22	Yes		NA	3	1	2	1	0			Yes		No		No	Yes	
243	Toul Makak	Preab Von	Khmer	71	Yes		NA	4	1	3	0	1									
244	Toul Makak	Chhoun Chen	Khmer	47	Yes		NA	7	4	3	1	2			Yes		No	Yes		Yes	
245	Toul Makak	Maiy Tiem	Khmer	38	Yes		NA	4	2	2	0	2									
246	Toul Makak	Ven Samet	Khmer	28	Yes		NA	4	3	1	1	1									
247	Toul Makak	Prounh Khen	Khmer	63	Yes		NA	3	1	2	0	0									
248	Toul Makak	San Rothy	Khmer	33	Yes		NA	4	1	3	0	2									
249	Toul Makak	Soeun Thearith	Khmer	26	Yes		NA	4	3	1	2	0									
250	Toul Makak	Dy Vanny	Khmer	58		Yes	NA	1	0	1	0	0		Yes		WHH	Yes		No	No	
251	Toul Makak	Seab Kosal	Khmer	28	Yes		NA	6	3	3	1	2									
252	Toul Makak	Nor Nan	Khmer	80	Yes		NA	6	5	1	0	0									
253	Toul Makak	Tes Saroeun	Khmer	67	Yes		NA	2	1	1	0	0									
254	Toul Makak	Horn Vuth	Khmer	43	Yes		NA	3	1	2	0	1									
255	Toul Makak	Thai Thorng	Khmer	27	Yes		NA	3	1	2	1	0									
256	Toul Makak	Heab Bunthorn	Khmer	35	Yes		NA	7	3	4	2	3									

257	Toul Makak	Aim Rayout	Khmer	33	Yes		NA	5	4	1	1	2									
258	Toul Makak	Song Savat	Khmer	36	Yes		NA	5	3	2	1	2									
259	Toul Makak	Sim Seng	Khmer	57		Yes	NA	3	1	2	0	0			Yes	WHH	No		No	No	
260	Toul Makak	Dim Rith	Khmer	54	Yes		NA	2	1	1	0	0									
261	Toul Makak	Kung Samak	Khmer	26	Yes		NA	2	1	1	0	0									
262	Toul Makak	Moul Lorn	Khmer	65		Yes	NA	1	0	1	0	0				WHH					
263	Toul Makak	Keo Lun	Khmer	65	Yes		NA	2	2	0	0	0									
264	Toul Makak	Thaiy Thon	Khmer	58	Yes		NA	3	2	1	0	0									
265	Toul Makak	Thaiy Sopheap	Khmer	28	Yes		NA	4	1	3	2	0									
266	Toul Makak	Heab Bunthoeun	Khmer	32	Yes		NA	4	2	2	1	1									
267	Toul Makak	Bin Vab	Khmer	65	Yes		NA	7	4	3	0	1									
268	Toul Makak	Chheang Heng	Khmer	52	Yes		NA	4	3	1	0	0									
269	Toul Makak	Chhiv Sokreut	Khmer	38	Yes		NA	1	1	0	0	0									
270	Toul Makak	Ouk Tum	Khmer	57	Yes		NA	4	1	3	0	1									
271	Toul Makak	Ouch Heab	Khmer	47	Yes		NA	5	2	3	0	0									
272	Toul Makak	Chin Thy	Khmer	36	Yes		NA	5	4	1	2	0									
273	Toul Makak	Loek Chhunly	Khmer	27	Yes		NA	3	2	1	1	0									
274	Toul Makak	Bou Phearum	Khmer	28	Yes		NA	3	1	2	1	0									
275	Toul Makak	Min Maiy	Khmer	38	Yes		NA	6	2	4	0	2									
276	Toul Makak	Doun Veha	Khmer	35	Yes		NA	4	3	1	1	1									
277	Toul Makak	Ry Rinn	Khmer	28	Yes		NA	4	1	3	0	1									
278	Toul Makak	Long Samuth	Khmer	55	Yes		NA	7	3	4	1	1									
279	Toul Makak	Sok Born	Khmer	58	Yes		NA	5	4	1	0	0									
280	Toul Makak	Kit Khoeut	Khmer	53	Yes		NA	10	6	4	0	1	Yes								
281	Toul Makak	Sun Sokhom	Khmer	39	Yes		NA	7	4	3	1	4									
282	Toul Makak	Sim Chamroeun	Khmer	40	Yes		NA	6	2	4	0	1									
283	Toul Makak	Lay Phorn	Khmer	58	Yes		NA	5	3	2	1	0									
284	Toul Makak	Phy Sophal	Khmer	26	Yes		NA	4	2	2	1	1									
285	Toul Makak	Hun Vanny	Khmer	57	Yes		NA	6	4	2	0	2									
286	Toul Makak	Khoeun Channa	Khmer	34	Yes		NA	4	1	3	0	2			Yes		No		No	Yes	
287	Toul Makak	Em Moeun	Khmer	69		Yes	NA	3	0	3	0	2				WHH					
288	Toul Makak	Sok Khorn	Khmer	56	Yes		NA	4	1	3	0	0									
289	Toul Makak	Sok Channa	Khmer	26	Yes		NA	4	1	3	2	0									
290	Toul Makak	Ouk Poeun	Khmer	51	Yes		NA	4	2	2	0	1									
291	Toul Makak	Soun Bunnith	Khmer	25	Yes		NA	3	1	2	1	0									
292	Toul Makak	Soun Vuthy	Khmer	56	Yes		NA	3	2	1	0	0									
293	Toul Makak	Rous Sophon	Khmer	55	Yes		NA	4	2	2	0	1									
294	Toul Makak	Soun Saroeun	Khmer	31		Yes	NA	2	0	2	1	0				WHH					
295	Toul Makak	Soun Moa	Khmer	34	Yes		NA	5	2	3	0	3									
296	Toul Makak	Mek Lat	Khmer	76		Yes	NA	1	0	1	0	0				WHH					
297	Toul Makak	Phok Vun	Khmer	51	Yes		NA	6	3	3	0	2									
298	Toul Makak	Brak Chamnoeun	Khmer	34	Yes		NA	3	2	1	1	0									
299	Toul Makak	Soa Chorn	Khmer	58	Yes		NA	6	3	3	0	1			Yes		No		No	No	
300	Toul Makak	Soun Sarom	Khmer	23	Yes		NA	4	2	2	2	0									
301	Toul Makak	Soun Sokdoeun	Khmer	30	Yes		NA	4	1	3	1	2		Yes			No	Yes		Yes	
302	Toul Makak	Ngin Ny	Khmer	48	Yes		NA	6	3	3	0	3									
303	Toul Makak	Y Chumno	Khmer	28	Yes		NA	3	1	2	1	0									
304	Toul Makak	Choub Heak	Khmer	52		Yes	NA	4	1	3	0	0				WHH					
305	Toul Makak	Chheang Thea	Khmer	31	Yes		NA	2	1	1	0	0									
306	Toul Makak	Bin Lein	Khmer	63	Yes		NA	5	3	2	0	0									
307	Toul Makak	Moung Moa	Khmer	54		Yes	NA	4	1	3	0	1				WHH					
308	Toul Makak	Em Dy	Khmer	69		Yes	NA	2	0	2	0	0				WHH					
309	Toul Makak	Min Vibol	Khmer	40	Yes		NA	4	2	2	0	0									
310	Toul Makak	Min Chansocheata	Khmer	31		Yes	NA	4	0	4	1	2				WHH					
311	Toul Makak	Pov Loun	Khmer	44	Yes		NA	5	3	2	0	2									
312	Toul Makak	Touch Sophanny	Khmer	33	Yes		NA	4	3	1	0	2									
313	Toul Makak	Lim Rithy	Khmer	48	Yes		NA	5	2	3	0	1									
314	Toul Makak	Orn Pov	Khmer	56		Yes	NA	2	1	1	0	0				WHH					
315	Toul Makak	Mann Rath	Khmer	32	Yes		NA	3	2	1	1	0		Yes			No		No	Yes	
316	Toul Makak	Bou Bea	Khmer	81	Yes		NA	4	2	2	0	0				Elderly					
317	Toul Makak	Toun Soaly	Khmer	36	Yes		NA	5	4	1	0	3									
318	Toul Makak	Seab Bunthoeun	Khmer	42	Yes		NA	7	5	2	0	3									
319	Toul Makak	Bou Soviet	Khmer	35	Yes		NA	5	3	2	1	2									
320	Toul Makak	Dul Taiy	Khmer	59		Yes	NA	3	1	2	0	0				WHH					
321	Toul Makak	Chhay Soksan	Khmer	29	Yes		NA	4	2	2	1	1									
322	Toul Makak	Suy Nary	Khmer	61		Yes	NA	3	1	2	0	1				WHH					
323	Toul Makak	Svay Vanthol	Khmer	30	Yes		NA	3	1	2	0	0									
324	Toul Makak	Suy Channoeun	Khmer	30		Yes	NA	2	1	1	0	1				WHH					
325	Toul Makak	Chhoun Ratha	Khmer	51	Yes		NA	2	2	0	0	0									
326	Toul Makak	Oeun Chanda	Khmer	29	Yes		NA	5	2	3	3	0									
327	Toul Makak	Vath Cheun	Khmer	31	Yes		NA	4	2	2	0	2									
328	Toul Makak	Phon Ry	Khmer	67		Yes	NA	8	2	6	1	1				WHH					
329	Toul Makak	Meung Pon	Khmer	55	Yes		NA	3	2	1	0	0									
330	Toul Makak	Kim Phearin	Khmer	45			NA	6	4	2	1	1									
331	Toul Makak	Meung Soeun	Khmer	67		Yes	NA	1	0	1	0	0				WHH					
332	Toul Makak	Phoung Pengly	Khmer	38	Yes		NA	4	2	2	1	1									
333	Toul Makak	Chin Rath	Khmer	28	Yes		NA	3	1	2	0	1									
334	Toul Makak	Sem Sara	Khmer	54	Yes		NA	3	1	2	0	0									
335	Toul Makak	Pov Dy	Khmer	57		Yes	NA	1	0	1	0	0				WHH					
336	Toul Makak	Tun Samrong	Khmer	29	Yes		NA	3	1	2	0	0									
337	Toul Makak	Norm Ry	Khmer	50	Yes		NA	12	6	6	0	1									
338	Toul Makak	Inn Kakh	Khmer	26	Yes		NA	4	2	2	1	1									
339	Toul Makak	Ouch Samady	Khmer	32	Yes		NA	4	2	2	2	0									
340	Toul Makak	Horn Pisey	Khmer	32	Yes		NA	3	2	1	1	0									
341	Toul Makak	Ouch Lalin	Khmer	22	Yes		NA	3	2	1	1	0									
342	Toul Makak	Chea Vannak	Khmer	45	Yes		NA	4	3	1	0	2									
343	Toul Makak	Orm Chakrya	Khmer	23	Yes		NA	3	2	1	1	0									

344	Toul Makak	Vy Amnort	Khmer	32	Yes		NA	4	3	1	2	0									
345	Toul Makak	Chan Sophin	Khmer	60	Yes		NA	3	2	1	0	0		Yes			No		No	Yes	
346	Toul Makak	Nga Kuy	Khmer	39	Yes		NA	6	3	3	0	2									
347	Toul Makak	Pork Sam An	Khmer	35	Yes		NA	4	1	3	2	0									
348	Toul Makak	Khiev Seng	Khmer	56	Yes		NA	3	2	1	0	0									
349	Toul Makak	Sok Sarin	Khmer	27	Yes		NA	4	2	2	1	1									
350	Toul Makak	Sok Sovann	Khmer	56	Yes		NA	2	1	1	0	0									
351	Toul Makak	Pov Ly	Khmer	35	Yes		NA	2	1	1	0	0									
352	Toul Makak	So Ath	Khmer	57	Yes		NA	2	1	1	0	0									
353	Toul Makak	Ban Sokha	Khmer	33	Yes		NA	4	2	2	1	1									
354	Toul Makak	Ngin Ngoeun	Khmer	32	Yes		NA	4	2	2	0	2									
355	Toul Makak	Brak Sitha	Khmer	33	Yes		NA	2	1	1	0	0									
356	Toul Makak	So Tou	Khmer	37	Yes		NA	3	1	2	1	0									
357	Toul Makak	Uy Narous	Khmer	41	Yes		NA	6	3	3	0	2			Yes		No	Yes		Yes	
358	Toul Makak	You Ra	Khmer	49	Yes		NA	4	3	1	0	2									
359	Toul Makak	Nou Chann/ phan	Khmer	68		Yes	NA	2	1	1	0	0	Yes	Yes		WHH	No	Yes		Yes	
360	Toul Makak	Morm Samnang	Khmer	29		Yes	NA	2	0	2	1	0				WHH					
361	Toul Makak	Morm Sreyneang	Khmer	26		Yes	NA	2	0	2	1	0				WHH					
362	Toul Makak	Chroch Chantrea	Khmer	35	Yes		NA	3	2	1	1	0									
363	Toul Makak	Namm Laiy	Khmer	24	Yes		NA	4	2	2	1	1									
					279	**81**		**1462**	**711**	**755**	**177**	**305**	**3**	**23**	**29**	**77**					

NOTE: **Total ID Poor 1 and ID Poor 2 in Toul Makak village 88 HHs, But after verification with the Village population list are less than the HHs that are accurated holding ID Poor cards, The actual numbers of ID Poor hold are 88 HHs, but in the village list is only 52 HHs, it means 36 HHs have not seen in the list. Total ID Poor 2 in the whole village has 44 HHs, but in the actual list has only 29 HHs, it means 15 HHs has not seen in the village**

DISABLE: Total disable in whole village is 7 persons, but in the ID Poor List has only 3 persons.

WHHs: Women Headed Household is 77 in Toul Makak but the ID poor card holders has WHHs only 36 persons.

padek artnership for Development in Kampuche in association with WEST EAST DEVELOPMENT (CAMBODIA) Consultancy and Development Partnership

Software small-scale sanitation activities implementation project

I. Introduction:

The software small-scale sanitation activities implementation project will be implemented in the target province of Pursat in the three target villages of Toul Makak, Kosh and Kbal Hong. However, there are only two villages of Kosh and Toul Makak will be provided the hardware latrines construction activities because these two villages fitted to criteria selection and the process/steps of activities before delivering sanitation grant. As for Kbal Hong village will be constructed the toilets reparation and sewages connection. These criteria and procedures of activity selection were attached in word and excel files for information and evidence.

II. HHs baseline dataset:

The field team staff led by the provincial coordinator in Pursat province supported by the Phnom Penh team staff conducted the HHs baseline dataset criteria selection for HHs who will receive the latrines construction in an accountability, transparency and qualitative manners in the three target villages of Toul Makak, Khos and Kbal Hong. The HHs baseline dataset is attached in the word and excel files for information and evidence.

III. Orientation trainings needed:

A set of trainings will be conducted to orientate the small-scale sanitation project implementation activities including the campaigns, awareness, trainings and workshop to the target communities' villagers, local authorities and relevant government staff as well as stakeholders and related implementer agencies. The activities are as the followings below:

- Training on how to proper use latrine using CLTS approaches/methodologies ToT to trigger;

- Training on public health;
- Training on health and hygiene promotion ToT including hand washing, solid waste management and menstrual hygiene management;
- Campaigns on the important and advantage of latrine use for all, hand washing and solid waste management;
- Knowledge, awareness and workshop about the small-scale sanitation project WASH activities including the effective use of IEC materials;
- Contribute participating in global hand washing and sanitation days, environmental day and global water day.

IV. Roles and responsibilities monitoring framework:

All the CMEI project staff including community mobiliser, provincial coordinator, civil engineer and public health promotor with the specific technical supports from the team leader will follow up and monitor for ensuring this small-scale sanitation project activities running smoothly in effective, efficient and qualitative manners since the beginning until the exit of project activities implementation.

As regular monitoring mechanism, tools and checklists "Activity Monitoring System" are used to ensure that all activities are implemented on time and in a quality defined by respective indicators. Brief activity monitoring reports are produced by Team Leader of the CMEI Project based on inputs from the fields' team members. The project documents mention Participatory Monitoring by the target groups and project staff during regular field visits of PADEK and CMEI's senior staff to receive feedback from the main target groups.

Two positive aspects of the M&E system is developing the result-oriented database that includes main features of the settlement profiles (demographic information, safety of and access to social infrastructure, personal safety, and perception of tenure security by dwellers, priorities for settlement improvement, economic indicators etc.) and a complaint mechanism.

The financial monitoring is very strong as PADEK has extensive experience in managing other grants as well as working with local partners in Cambodia. PADEK Finance & Administration Director and Partnership Finance Officer provide Consortium members' staff with finance/ admin and procurement training and ongoing assistance in order for the Action to adhere to the regulations and procedures.

Monitoring, evaluation, learning and reporting will be done according to the PADEK and CMEI Project frameworks. Baseline data will update during the design phase through database searches system as well as new research such as Knowledge Attitude and Practice (KAP). A range of tools will be used to ensure that all information needs are met and that lessons learnt are rapidly collated and debated to form new best practice. These tools include: stakeholder feedback through discussion groups, reporting and monitoring meetings, focus group discussions, household surveys, interviews with key informants and use of government statistics. Key outputs are expected to be: baseline survey report, KAP survey report, field visit reports, monthly report, six-monthly monitoring review, annual report and final exit evaluation report.

Community Mobilization and Environmental improvements (CMEI)
Output # 03 of Integrated Urban Environmental Management in Tonle Sap Basin

Terms of Reference for

Assessment

Background

The agencies PADEK and WEDC have been awarded the project output: Community Mobilization and Environmental improvements (CMEI) under the project titled "Integrated Urban Environmental Management in Tonle Sap Basin" This is part of a larger mandate to help develop the Tonle Sap basin.

Project Brief: The Community Mobilization and Environmental Improvements (CMEI) output will translate Project principles into community action. This includes support for community planning and prioritization, and provision of community-driven climate-resilient urban environmental infrastructure. The involvement of local communities, including poor, vulnerable and ethnic Cham and Vietnamese, in planning, decision-making and supervision of the works will encourage local solutions and greater accountability of the services delivered. It will help to create ownership and provide benefits to those often marginalized and vulnerable.

Need for the Assessment	In order to understand the Key WASH needs of the communities and help design the project actions on WASH and any other emerging needs . The focus of the visit to understand the needs around the sanitation and the effective and time bound ways of disbursing the sanitation grants to the needy ID poor communities
Geography	Operational areas in Pursat
Dates	11& 12 September 2019
Team members	• Voeun Veth – Engineer- vethvoeun07@gmail.com • Mr. Him Saroeurn: provincial project coordinator in Pursat (017 707 296) • Mr. Nam Chamnab : Community Mobiliser in Pursat
Expected Results	• A **Detailed Report** covering the following: o **Informed understanding** of the field geography and the needs of the community o **Discussions with the project communities on the public health and WASH needs** o **Technical solutions** for the needs expressed by the project communities o **Realistic BoQ, budget, specifications, Materials Availability and timelines** along with **detailed reporting on the O&M** (operations and Maintenance) of the technical solutions after the project implementation period o A status check on the community contribution on the proposed actions o Any other supports from the institutions or NGOs to the communities. • Any other unforeseen outcome

End of Document

Kbal Hong village Report

Village Description

Kbal Hong Village is a village in Sangkat Ptas Prey, Krong Pursat, Pursat Province. There are 362 families equal 272 houses. The population is 1443 people. 98 families of 362 families are poor families. Villager in Kbal Hong are government official, wholesaler, retailers, construction workers, factory's workers and some families immigrant to study and work outside the province.

1. Water

Water Description

People in Kbal Hong Villages take water from rain and Pursat Water Supply Authority for daily using such cooking, take a bath, wash clothes, toilets and drinking. Most of families access to Pursat Water Supply Authority. A total of 77 families live along the canal. Of these 77 families, 30 families do not have a connection to clean water pipe line. Families that did not access to water pipe line bought clean water from the family that have clean water pipe with price 3000₹/jar (around 1000Liters). Some poor families did not have enough money to support connection fee (Connection fee = 120$). Some families boil water before drinking but some do not boil.

Quantity

People can use water around 15 liters per person per day. There is equitable for villagers to access water. People in the village share water with other in cheap price. Water supply in this village is reliable and it will be enough for long term need.

Quality:

Water sources of Kbal Hong village are rain and clean water pipe. Community believe that their water sources is not contaminated because their water is treated in Water Supply Authority's System before sending to their house. They just feel and smell about Chloride. The water was transported by pipe line into the jars and concrete basin. People use jars to storage the water. Some rich and medium families have enough jars to storage but some poor families do not have enough water containers.

During transport water is likely not to be contaminated but during storage water is likely to be contaminated because some people did not clean their containers correctly and regularly. Some family's jars are no lid, so leaves and dust will flow into the jars.

Accessibility:

There is not so far for people in the village to access water pipe line from Pursat Water Supply Authority. There is not a serious problem for vulnerable groups such as elderly, disabled women to access the water because if they have enough money to pay for connection fee, Water Supply agency will connect for them.

Technical options:

The existing water supply situation inadequate because of poor living. Water Supply in this village do not have problems but the problems are some poor families do not have enough money to spend for the connection fee. There are not any springs in this area.

2. Sanitation

General Descriptions

There are 344 families in the village that have toilet in their house. But two toilets were broken. Only 18 families that did not have enough money to construct toilets. Some families have their own toilet to use but some do not have. Families that have no toilet have to ask from other house to defecate, some have to go to the field and some defecate into the canal.

When feces and urine are full in the septic tank, people will use generator to pump and take to the field but some families flow it into the canal under their house when flooding. The local preferred method of anal cleansing by hand using with water and use toilet water spray.

Facilities:

There are 344 families that already have toilets but not all toilets are good and clean. Some toilets are clean but some are bad smell and not clean. It can be extended if people have enough money to construct or get any sponsors. There are no facilities for hand washing. They wash their hand in their toilet or near their jars. There are many problems for vulnerable groups, e.g. elderly, disabled, women if their family do not have toilet. Open defecation practices for people who did not have toilet will threat to health because after defecate virus will spreading to the field, flowing in to water and filtering in to ground water. To build new facilities, there is sufficient space for new facilities but their land did not have Identity Certificate.

Practices:

People use water from rain clean water pipe line to cleaning anal. Both men and women prepared to use family latrines. In the village, there are many people familiar with the construction of latrines because many people in this village work as construction workers. During menstruation day, women use sanitary protection paper. She need toilet to clean her body.

Technical Aspects:

Local materials that available for constructing toilets are brick, cement, sand, aggregate, wood, zinc, and palm leave.

The rainfall season occur on May. It will affect to the construction or functionality of new latrines but not serious problems.

Solid waste disposal:

Solid waste in Kbal Hong village is a problem that need to consider, especially for people who live along the canal. Every day they produced waste around 3kgs to 5 kgs per family. Their waste come from leaves, kitchen wastes and plastics. There is a company that responsible for waste collecting but, in this village, they collect along provincial road 101. They did not go inside the village, they said it is difficult because of road. Villagers have to take their waste to the outside road. The company collecting process also late, so waste will be produced bad smell. Because this problem, some people in the village throw it into the canal, some people burn it and some people take to the front road and wait company to collect. People package waste without any separation. For waste from medical facilities and activities are disposed by burning in incinerator. The responsible person is Health Center Managers.

Wastewater disposal

Drainage:

Flooding in Kbal Hong Village always happened in rainy season, especially at the end of August and early September. There is a sewage system pipe line from Pursat market which connect with the canal in kbal Hong village. When the flood occurs, there road and house will be full of water. So, waste water will be mix with water and flow into their house. Mosquitoes, snakes, and other insects will be occurred. Many people will have dengue fever and fever. The existing methods of disposing of water from: water points, domestic waste water from washing utensils, bathrooms, laundry etc, and livestock is filter into the ground water, flow out to the field and flow into the canal. There is a small drainage facility for disposal of storm water across this village around 700m and 6m in width.

3. Hygiene and Public Health

The behaviors might be contributing to risks to public health in this are open defecation, throw waste into the canal, flow feces and urines into the canal, and burn waste.

The current practices on the key hygiene behaviors that people in the village use are washing hands after defecation, disposal of children's feces by bury in the ground or throw to the field or take in to the toilet, storage water in clay jars without lid, washing hand before eating.

Some people understand the relationship between water/sanitation and disease clearly and some understand a little bit depending on their understanding level. However, they understand but some families still do the action that can be threated to their health.

People have access to lidded water containers, cooking utensils, bathing facilities, soap, menstrual sanitary protection, and mosquito nets.

There are the users involved in the management and maintenance of water sources and latrines but the level of management and maintenance depending on level of people's knowledge and living standard. There are hygiene promotion media are available in this village. Racha and Harvest Organization used to train about hygiene problems to the villagers.

Pictures of Kbal Hong Village Study Tour

Pictures of Kbal Hong Village Study Tour

Toul Mkak village Report

Village Description

Toul Mkak Village is a village in Sangkat Roleab, Krong Pursat, Pursat Province. There are 347 families equal 438 houses. The population is 1598 people (887 are women) with 3063 hectare area. Based on this big area, village divided into 9 blocks. 88 families of 347 families are poor families. Villager in Toul Mkak are famers, construction workers, factory's workers and 10 families immigrant to work in Cambodia-Thailand border.

1. Water

Water Description

People in Toul Mkak Villages take water from rain, wells and Ponds for daily using such cooking, take a bath, wash clothes, toilets and feet their animals. However, they bought drinking water from retailer near their house with price 2000₹/Bottle (1Bottle=20Liters). Most of people in the community buy drinking water bottle, however other use clay filters. In the village have 12 wells hand pump, 20 RC wells and 10 ponds. But 5 wells hand pump was broken and only 4 RC wells can use the whole year out of this cannot use in the dry season. It is not enough for long term needs especially in dry season, the water in the wells and ponds will be not enough for them to use. So, some people that do not have their own well or pond need to buy water from private sector that have water truck in price 25000₹/ (small water truck=3000Liters) and 45000₹/truck (big water truck=6000Liters) for their daily using. On the day that we visited, there was not dry season but they still buy water because there is no rain for many days. Based on community answered, along national road number 5 there are clean water pipe line across their house by private company connection to their company but villager cannot access to pipe line to their houses because The Pursat Water Supply Authority said there are not enough water for that area. Maybe around 2020 or 2021 they will access the pipe line for the villagers.

There is a 3km canal in the village for agricultural but now this canal need to restoration and construct the gate to store water for famers. When the rain come, water will flow to downstream.

Quantity

People can use water around 10 liters per person per day. Some blocks in the village are equitable for villagers to access the water. Villager that have their own well or pond share water with other who do not have. But some people do not want to share water with other. Now only 7 wells hand pump, 20 RC wells and 10 small ponds can be used in the villager. So, it is not enough

for long term need especially in dry season. In dry season water level will be low and 16 RC wells will not have water. The current water supply cannot be reliable because in dry season water will be not enough water for villagers. Villagers also need to consider drinking water for livestock.

Quality:

Water sources of Toul Mkak village are rain, wells, and ponds. Community did not know that their water sources are contaminated or not because no one used to test water quality for them. They also want to know about water quality and find the way to treat if water is contaminated. People transport water from wells and ponds into the jars and store it without any treatment. People use small plastic tank and some people use pumping machine to transport water to their house. People use clay jars to storage the water. Some rich and medium families have enough jars to storage but some poor families do not have enough water containers.

During transport and storage water is likely to be contaminated because some people did not clean their plastic tank correctly before take water and some people's jars no lid, so leaves and dust will flow into the jars.

Accessibility:

In every block in the village has wells and ponds, so people around there can go and take water from that place around 100m 200m. In dry season some wells and ponds do not have enough water, so people need to go around 1000km to take water. There are some problems of accessibility for vulnerable groups, e.g. elderly, disabled, women. Road around there is not so good and the traditional way to take water also difficult for them because they need to have body power to take from water sources and transport to their house. Out of these 12 wells hand pump, 20 RC wells and 10 ponds. The possible alternative sources to improve water shortage problem in this area should be adding more wells and ponds and the connection pope line from Pursat Water Supply Authority. There are some obstacles for them to use the existing water sources because some families do not have their own, so when the owner want to backfill the well and pond people will meet the problems. Moreover, some owner do not want other to take from their place.

Technical options:

The existing water supply situation inadequate because of poor. Some families do not have enough money to build the facilities and some families do not have own land. Local people believe that if more wells and ponds are constructed and the existing wells and ponds are restoring, they will have enough water to use. There is clean water pipe line from Pursat Water Supply Authority that can be expand but authority said water is not enough for that village. Clean water pipe line will be

install in 2020 or 2021. Beside wells and ponds people also collect water from rain during rainy season but it is not enough for long term using because people have a few jars can not store for long term. There are not any springs in this area.

2. Sanitation

General Descriptions

There are 64 families in the village that do not have toilet in their house. In these 64 families, there are only 35 families that have place to construct the toilet and 29 families did not have own land. Some families have their own toilet to use but some do not have. Families that did not have toilet have to go the rice field to defecate. When feces and urine are full in the septic tank, people will use generator to pump and take to the field. The local preferred method of anal cleansing by hand using with water.

Facilities:

There are 313 families that already have toilets but only 100 toilets are good and clean enough. They are all can use but some toilets produce some bad smell and not clean. It can be extended if people have enough money to construct or get any sponsors. There are no facilities for hand washing. They wash their hand in their toilet or near their jars. There are many problems for vulnerable groups, e.g. elderly, disabled, women if their family do not have toilet. Open defecation practices for people who did not have toilet will threat to health because after defecate virus will spreading to the field, flowing in to water and filtering in to ground water. To build new facilities, there is sufficient space for new facilities but only 35 families of 64 families that have sufficient space. Some families have sufficient space for new facilities but some do not have because they live in other people's land.

Practices:

People use water from rain, well, pond and buying from water truck to cleaning anal. Both men and women prepared to use family latrines. In the village, there are many people familiar with the construction of latrines because many people in this village work as construction workers. During menstruation day, women use sanitary protection paper. She need toilet to clean her body.

Technical Aspects:

For RC well, people dig in 6m depth by hand. For well hand pump they can drill by machine until 50m depth.

Local materials that available for constructing toilets are brick, cement, sand, aggregate, wood, zinc, and palm leave.

The rainfall season occur on May. It will affect to the construction or functionality of new latrines but not serious problems.

Solid waste disposal:

Solid waste in Toul Mkak village also have problems but it is not a big problem because people did not make much waste. Their waste come from leaves, kitchen wastes and plastics. They produced around 3kgs to 5 kgs per day per family. After 2 or 3 day they will burn their waste without any separation. They disposed these solid wastes on site. For waste from medical facilities and activities are disposed by burning in incinerator. The responsible person is Health Center Managers.

Wastewater disposal

Drainage:

There is no flooding in Toul Mkak Village. People in this village did not have stagnant pools of standing water. The existing methods of disposing of water from: water points, domestic waste

water from washing utensils, bathrooms, laundry etc, and livestock is filter into the ground water and flow out to the field. There is no slope or drainage facilities for disposal of storm water.

3. Hygiene and Public Health

The behaviors might be contributing to risks to public health in this are open defecation waste water disposed and burn waste.

The current practices on the key hygiene behaviors that people in the village use are washing hands after defecation, disposal of children's feces by bury in the ground or throw to the field or take in to the toilet, storage water in clay jars without lid, washing hand before eating.

Some people understand the relationship between water/sanitation and disease clearly and some understand a little bit but there is no choice for them to choose.

People have access to lidded water containers, cooking utensils, bathing facilities, soap, menstrual sanitary protection, and mosquito nets.

There are the users involved in the management and maintenance of water sources and

latrines but the level of management and maintenance depending on level of people's knowledge and living standard. There are hygiene promotion media are available in this village. Racha and Harvest Organization used to train about hygiene problems to the villagers.

Recommendation from village leader and villagers:

- Construct 5 more wells
- Restoration the canal and construct road along the canal
- Construct the canal gate
- Construct toilets

Pictures of Toul Mkak Village Study Tour

Pictures of Toul Mkak Study Tour