ກະຊວງສຶກສາທິການ

ສ ປ ປ ລາວ

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ

ສັນຕິພາບ ເອກະລາດ ປະຊາທິໄຕ ເອກະພາບ ວັດທະນາຖາວອນ

ປຶ້ມຄູ່ມື ກ່ຽວກັບ ການປຸກສ້າງໂຮງຮຽນ ຢູ່ ສປປ ລາວ

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ຄຳນຳ

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ ເປັນປະເທດ ທີ່ຍັງມີຄວາມສ່ຽງ ຕໍ່ກັບໄພອັນຕະລາຍ ທີ່ຈະເກີດຂຶ້ນ ຈາກທຳມະຊາດ,ໂດຍສະເພາະ ຈາກໄພນ້ຳຖ້ວມ,ໄພແຫ້ງແລ້ງ ແລະ ລົມພາຍຸ. ປະເທດ ຍັງໄດ້ຮັບ ຜົນກະທົບ ຈາກດິນເຈື່ອນ, ໄຟໄຫມ້, ແຜ່ນດິນໄຫວ ແລະ ລະເບີດທີ່ຍັງບໍ່ທັນແຕກ ໃນແຕ່ລະເຂດ ແມ່ນໄດ້ຮັບ ໄພອັນຕະລາຍ ທີ່ ແຕກຕ່າງກັນ. ນ້ຳຖ້ວມ ລຽບຕາມແຄມແມ່ນ້ຳຂອງ ແລະ ສາຍນ້ຳສາຂາ, ສ່ວນຫລາຍ ໄດ້ ກະທົບໃສ່ ເຂດ ໃນ ພາກກາງ ແລະ ພາກໃຕ້, ຂະນະ ດຽວກັນ ໄພແຫ້ງແລ້ງ ກະທົບໃນແຂວງ ເບື້ອງຕາເວັນຕົກ ແລະ ບາງເຂດທີ່ ພື້ນທີ່ສູງໃນແຂວງພາກໃຕ້.

ກະຊວງສຶກສາທິການໄດ້ເຫັນເຖິງ ໄພອັນຕະລາຍ ທີ່ກະທົບໃສ່ ປະຊາຊົນລາວ, ໂດຍສະເພາະ ຕໍ່ ເດັກນັກຮຽນ ແລະ ຄູ, ແລະ ຕໍ່ ການປະກອບສ່ວນ ໃສ່ຂະແຫນງການສຶກສາ ກໍຄື ພື້ນຖານທາງເສດຖະກິດ ຂອງ ປະເທດ. ດັ່ງນັ້ນ, ກະຊວງສຶກສາທິການ, ໂດຍ ພະແນກ ອອກແບບ ກໍ່ສ້າງ-ສ້ອມແປງ, ກົມການເງິນ ໄດ້ສ້າງ ບົດແນະນຳ ການປຸກສ້າງໂຮງຮຽນ ໃນ ສປປ ລາວຂຶ້ນ. ວຽກນີ້ ແມ່ນ ນອນໃນແຜນງານ ຫລຸດຜ່ອນ ຄວາມສ່ຽງຕໍ່ ໄພພິບັດ ເຂົ້າໃນ ຂະແຫນງການສຶກສາ ທີ່ໄດ້ ເລີ້ມ ແຕ່ ປີ 2007 ໂດຍ ການຮ່ວມມື ຂອງ ຫ້ອງການ ຄຸ້ມຄອງໄພພິບັດແຫ່ງຊາດ (NDMO) ແລະ ສູນຕຽມພ້ອມປ້ອງກັນໄພພິບັດ ແຫ່ງ ອາຊີ(ADPC), ອົງການ ສະຫະປະຊາຊາດເພື່ອ ການ ພັດທະນາ (UNDP) ແລະ ອົງການຊ່ວຍເຫລືອ ດ້ານມະນຸດສະທຳ ຂອງສະຫະພາບ ເອີຣົບ (ECHO).

ບົດແນະນຳ ສະບັບນີ້ ແມ່ນ ສັງລວມ ຄວາມເຫັນດີ ຢ່າງເປັນ ເອກະພາບ ເພື່ອ ເຮັດໃຫ້ ໂຮງຮຽນ ປອດໄພ ຈາກ ໄພພິບັດ ແລະ ຄວາມເປັນ ເພື່ອນມິດ ຂອງ ເດັກ ນັກຮຽນໃນ ສປປ ລາວ. ການກໍ່ສ້າງ ໂຮງຮຽນ ໃນລາວ ແມ່ນໄດ້ ມີ ການແນະແນວ ຕາມມາດຕະຖານສາກົນ ແລະ ໂດຍ ຜູ້ໃຫ້ທຶນ ແລະ ຕົວແທນ ຂອງຄູ່ຮ່ວມພັດທະນາ ເຊັ່ນ: WB, ADB, JICA, AusAID & UNICEF. ເຖິງ ເວລາ ແລ້ວ ສຳລັບ ລັດຖະບານ ລາວ ຕ້ອງໄດ້ມີ ບົດແນະນຳ ການປຸກສ້າງ ໂຮງຮຽນ ເປັນຂອງຕົນເອງ ທີ່ປະກອບດ້ວຍ ການພິຈາລະນາ ເຖິງໄພທຳມະຊາດ ທີ່ຈະເກີດຂຶ້ນ ໃນ ປະເທດ.

ບົດແນະນຳ ການປຸກສ້າງໂຮງຮຽນ ສະບັບນີ້ ແມ່ນເພື່ອ ໃຫ້ທິດນຳ ໃນການປະຕິບັດ ການປຸກສ້າງ ທັງຫມົດ ທີ່ຈະປຸກສ້າງ ໃຫມ່ ໃນຕໍ່ຫນ້າ ໂດຍ ກະຊວງ ສຶກສາທິການ ນັບແຕ່ ລະດັບ ສູນກາງ, ລະດັບ ແຂວງ ແລະລະດັບ ເມືອງ, ແລະ ໂດຍ ຜູ້ໃຫ້ທຶນ ຫລື ຄູ່ຮ່ວມມືໃນ ການພັດທະນາ. ຄູ່ມື ສະບັບນີ້ ໄດ້ ສ້າງ ມາດຕະຖານ ຕ່ຳສຸດ ທີ່ ສາມາດ ຮັບໃຊ້ ແລະແທດເຫມາະ ກັບ ທຸກໂຄງການ ປຸກສ້າງ ໃນ ສປປ ລາວ ຜູ້ໃຫ້ທຶນ ຫລື ຄູ່ຮ່ວມມື ໃນການພັດທະນາ ຍັງສາມາດ ນຳໃຊ້ ລະບຽບການ ແລະ ມາດຕະຖານ ຂອງ ຕົນ ແລະ ສາມາດ ເພີ້ມ ເຂົ້າໄດ້ ແຕ່ ບໍ່ແມ່ນ ມາປ່ຽນແທນ ຄູ່ມື ສະບັບນີ້.

ຄູ່ມື ສະບັບນີ້ ໄດ້ ກວມເອົາທັງຫມົດ ຂອງ ຂະບວນການ ວຽກງານ ການປຸກສ້າງ ໂຮງຮຽນ ນັບແຕ່ ການ ວາງແຜນ ຈັດຫາ ສະຖານທີ່ ບ່ອນກໍ່ສ້າງ, ການອອກແບບ ອາຄານຮຽນ,ແລະ ການປົກປັກ ຮັກສາ ໂຮງຮຽນ.

ຄູ່ມື ນີ້ ໄດ້ໃຫ້ ທິດນຳ ເພື່ອ ຮັບປະກັນ ຄວາມປອດໄພ ຈາກຜົນກະທົບຈາກ ໄພທຳມະຊາດ ແລະ ການພິຈາລະນາ ດ້ານຄວາມເປັນເພື່ອນ ມິດ ຂອງ ເດັກ-ໂຮງຮຽນ ໃນ ສປປ ລາວ ແລະ ວິໃສທັດ ເພື່ອບັນລຸ

ການສຶກສາເພື່ອ ຫມິດທຸກຄົນ ໃນທົ່ວປະເທດ. ຄູ່ມື ນີ້ ແມ່ນ ບໍ່ໄດ້ ເວົ້າສະເພາະ ກ່ຽວກັບ ປະເພດແບບ ແລະ ລັກສະນະຮູບຮ່າງ ຂອງ ອາຄານ ຫລື ຄວາມແຕກຕ່າງ ຂອງສະຖານທີ່; ແຕ່ ໄດ້ ກຳນົດ ທາງ ລະບຽບ ຫລັກການ ແລະມາດຕະຖານ ທີ່ຕ້ອງໄດ້ ເອົາໃຈໃສ່ ເພື່ອ ຮັບປະກັນ ຄວາມ ປອດໄພ ໃນ ເວລາ ການ ວາງແຜນ, ການອອກແບບ ແລະ ການປຸກໂຮງຮຽນ ໃນທຸກ ສະຖານທີ່ ໃນ ທົ່ວປະເທດ, ບໍ່ວ່າຢູ່ ໃນ ຕົວເມືອງ ຫລື ຊົນນະບົດ, ແລະ ໃນເຂດທົ່ງພຽງ ຫລື ພູດອຍ.

ກະຊວງສຶກສາທິການ ຫວັງວ່າ ຄົງໄດ້ຮັບ ການຈັດຕັ້ງປະຕິບັດ ຕາມບົດແນະນຳ ຢ່າງມີ ປ ະສິດ ທິຜົນ, ເພື່ອເປັນການ ປະກອບສ່ວນເຂົ້າ ໃນການສ້າງ ຊາດ ແລະ ວິໄສທັດ ໃຫ້ແກ່ ໂຮງຮຽນ ປອດໄພ ເພື່ອ ຮັບປະກັນ ການສຶກສາເພື່ອຫມິດທຸກຄົນ ສຳລັບ ເດັກ.

ຢ່າງໃດກໍດີ ເນື້ອໃນ ຂອງຄູ່ມື ສະບັບນີ້ ອາດຈະຍັງ ບໍ່ທັນຄົບຖ້ວນ ແລະ ສົມບູນເທື່ອ ທັງນີ້ ກໍ ຍ້ອນວ່າ ເປັນຄັ້ງທຳອິດ ທີ່ ຂະແໜງການສຶກສາຂອງພວກເຮົາ ໄດ້ສ້າງຂຶ້ນ, ຫາກພົບຄວາມຫຍຸ້ງຍາກ ໃນການປະຕິບັດ ກະລຸນາ ແຈ້ງໃຫ້ ກະຊວງສຶກສາທິການ ພວກເຮົາ ຮັບຊາບ ດ້ວຍ ເພື່ອ ຈະເປັນບ່ອນອີງ ໃນການ ປັບປຸງແກ້ໄຂ ໃນອານາຄົດ.

ນະຄອນຫລວງວຽງຈັນ, ວັນທີ

ສາດສະດາຈານ ດຣ. ສົມກິດມັງຫນໍ່ເມກ,
ລັດຖະມົນຕີ ວ່າການກະຊວງສຶກສາທິການ

ຄຳຂອບໃຈ

ກະຊວງສຶກສາທິການ ຂໍສະແດງ ຄວາມຂອບໃຈ ເປັນຢ່າງສູງ ມາຍັງ ບັນດາທ່ານ ທີ່ໄດ້ ປະກອບສ່ວນ ເຂົ້າ ໃນການ ສ້າງ ຍົດແນະນຳ ການປຸກສ້າງໂຮງຮຽນ ໃນ ສປປ ລາວ. ຄູ່ມື ສະບັບນີ້ ແມ່ນ ຫມາກຜົນ ຂອງ ການຮ່ວມມື ແລະ ໃຫ້ການຊ່ວຍເຫລືອ ໃນເວລາ ເຮັດວຽກນຳກັນ ພາຍໃນ ກະຊວງສຶກສາທິການ ໂດຍ ການ ນຳພາ ຂອງ ພະແນກ ອອກແບບກໍ່ສ້າງ-ສ້ອມແປງ (ECDM) ແລະ ສູນຕຽມພ້ອມ ໄພພິບັດແຫ່ງ ອາຊີ (ADPC) .

ຂໍ ຂອບໃຈ ໄປຍັງ ບັນດາທ່ານ ທີ່ໄດ້ ເຂົ້າຮ່ວມ ກອງປະຊຸມ ທົບທວນ ຮ່າງ ຄູ່ມື ສະບັບເບື້ອງຕົ້ນ. ເປັນຕົ້ນ ແມ່ນ ຈາກ ພະແນກສຶກສາທິການແຂວງ ໃນ 16 ແຂວງໃນທົ່ວປະເທດ, ຕົວແທນ ຈາກ ຫນ່ວຍງານກໍ່ສ້າງ ຂອງ ພະແນກສຶກສາທິການແຂວງ, ແລະ ຜູ້ໃຫ້ທຶນ ແລະ ຄູ່ຮ່ວມມືໃນການພັດທະນາ, ໂດຍສະເພາະ (UNICEF, AUSAID, WB, ADB and JICA) ທີ່ ໄດ້ປະກອບຄວາມຄິດເຫັນ, ການຕຳນິຕິຊົມ ແລະເຮັດ ໃຫ້ ຄູ່ມື ອຸດົມ ສົມບູນ, ຄົບຖ້ວນ ແລະສອດຄ່ອງ ເຫມາະສົມ ຂຶ້ນເລື້ອຍໆ. ການປະກອບສ່ວນ ຂອງ ບັນດາທ່ານ ໃນ ຊ່ວງດຳເນີນ ກອງປະຊຸມ ; ນອກນັ້ນ ທ່ານ ຍັງ ໄດ້ ສະຫນອງ ເອກະສານ ແລະ ຂໍ້ມູນ ໂດຍຜ່ານ ທາງການສຳພາດ ແລະ ການຕິດຕໍ່ ທາງ ອີ ແມວ.

ກະຊວງສຶກສາທິການ ຂໍສະແດງ ຄວາມ ຈາລຶກ ບຸນຄຸນ ໂດຍສະເພາະມາຍັງ ຄະນະ ກຸ່ມວິຊາການ, ທີ່ໄດ້ ຊ່ວຍ ໃຫ້ ວຽກງານທີ່ໄດ້ປະຕິບັດນີ້ ມີຄວາມຫມາຍແລະສຳເລັດຜົນ ເພື່ອ ສ້າງ ຄູ່ມື ທີ່ມີ ຄວາມຕ້ອງການ ພາຍ ໃນປະເທດ.

ພາກສ່ວນ ກະຊວງສຶກສາທິການ:

- ທ່ານ ທິບພະມິນ ຈັນທະລັງສີ ຫົວຫນ້າ ພະແນກ ອອກແບບ ກໍ່ສ້າງ, ກົມການເງິນ
- ທ່ານ ດຣ. ແກ້ວວິວອນ ທ້ອງການ ກະຊວງສຶກສາທິການ
- ທ່ານ ບຸນສຸກ ທິລະສັກ ຫົວຫນ້າ ຫ້ອງການ ກະຊວງສຶກສາທິການ
- ທ່ານ Mike Lally, Senior Education Advisor, Education Sector Working Group

ພາກສ່ວນ ກະຊວງ ໂຍທາທິການ:

- ທ່ານ ໝູເຜືອກ ວິຣະບຸດ, ກົມເຄຫາ - ຜັງເມືອງ

ພາກສ່ວນ ມະຫາວິທະຍາໄລແຫ່ງຊາດ. ຄະນະ ສະຖາປັດຕິຍະກຳສາດ

- ທ່ານ ພິສິດ ສີຫາຣາຊາ, ຂະແຫນງ ຄົ້ນຄ້ວາວິໄຈ ແລະຫລັງມະຫາວິທະຍາໄລ

ພາກສ່ວນ ສູນກາງ ການຕຽມພ້ອມ ຕໍ່ໄພພິບັດ ອາຊຽນ:

- ທ່ານ Daniel Schwitter, Technical Specialist, SKAT
- ທ່ານ Lilia Blades, Research Associate
- ທ່ານ Phitsamai Khammanivong, National Research Assistant
- ທ່ານ Ronilda Co, Program Coordinator, ADPC
- ທ່ານ Manjusha Rai, Project Manager, ADPC
- ທ່ານ Arghya Sinha Roy, Program Manager, ADPC
- ທ່ານ Aloysius Rego, Deputy Executive Director, ADPC

ທ້າຍນີ້, ກະຊວງສຶກສາທິການ ຂໍ ຂອບໃຈນຳ ທາງ ສູນກາງ ການ ຕຽມພ້ອມ ຕໍ່ໄພພິບັດ ແຫ່ງ ອາຊຽນ (ADPC), ອົງການ ສະຫະປະຊາຊາດເພື່ອ ການ ພັດທະນາ (UNDP) ແລະ ອົງການ ຊ່ວຍ ເຫລືອ ດ້ານມະນຸດສະທຳ ຂອງສະຫະພາບ ເອີຣົບ(ECHO) ທີ່ໄດ້ ໃຫ້ ການຊ່ວຍເຫລືອ ກະຊວງ ສຶກສາ ທິການຕະຫລອດມາ ໃນວຽກງານການຫລຸດຜ່ອນໄພພິບັດ ເຂົ້າ ໃນ ຂະແຫນງການສຶກສາ ໃນ ສປປ ລາວ.

ສາລະບານ

ຊື່ຫຍໍ້

ADB	ທະນາຄານພັດທະນາອາຊີ
ADPC	ສູນກຽມພ້ອມຕອບໂຕ້ໄພພິບັດອາຊີ
AusAID	ອົງການເພື່ອການພັດທະນາຂອງ ປະເທດອົສເຕເຣຍ
BEGP	ໂຄງການ ສຶກສາຂັ້ນພື້ນຖານ (ເດັກຍິງ)
DEB	ຫ້ອງການສຶກສາທິການເມືອງ
DESIA	ກົມປະເມີນຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ ແລະ ສັງຄົມ
EA	ການປະເມີນຜົນທາງດ້ານສິ່ງແວດລ້ອມ
ECDM	ພະແນກ ຄຸ້ມຄອງ ອອກແບບ ກໍ່ສ້າງ-ສ້ອມແປງ
ECHO	ອົງການຊ່ວຍເຫລືອດ້ານມະນຸດສະທຳຂອງຄະນະກຳມາທິການເອີຣົບ
ESDF	ຂອບພັດທະນາຂະແໜງການສຶກສາ
EIA	ການປະເມີນຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມ
FAO	ອົງການອາຫານ ແລະ ການກະເສດ ຂອງ ສະຫະປະຊາຊາດ
GoL	ລັດຖະບານແຫ່ງ ສປປ ລາວ
IEE	ການປະເມີນຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມເບື້ອງຕົ້ນ
JICA	ອົງການຮ່ວມມືສາກົນຍີ່ປຸ່ນ
JICS	ລະບົບການຮ່ວມມືສາກົນຍີ່ປຸ່ນ
MOE	ກະຊວງສຶກສາທິການ ແຫ່ງ ສປປ ລາວ
NDMO	ຫ້ອງການຄຸ້ມຄອງໄພພິບັດແຫ່ງຊາດ
OCHA	ຫ້ອງການປະສານງານວຽກງານດ້ານມະນຸດສະທຳ (ສະຫະປະຊາຊາດ)
PES	ພະແນກສຶກສາທິການແຂວງ
PUCDA	ໜ່ວຍງານກໍ່ສ້າງຂອງພະແນກສຶກສາທິການແຂວງ
UNDP	ອົງການສະຫະປະຊາຊາດເພື່ອການພັດທະນາ
UXO	ລະເບີດທີ່ບໍ່ທັນແຕກ

ພາກ 1.

ບົດສະເໜີ

1.1 ຂໍ້ມູນກ່ຽວກັບປຶ້ມຄູ່ມື

ກະຊວງສຶກສາທິການ (MOE) ແລະ ບັນດາຜູ້ຖືຜົນປະໂຫຍດຮ່ວມ ທີ່ໄດ້ ປະຕິບັດ ກິດຈະການ ກໍ່ສ້າງໂຮງຮຽນ ໃນ ສປປ ລາວ ໄດ້ເຫັນຄວາມຈຳເປັນຂອງການມີ ປຶ້ມຄູ່ມືກ່ຽວກັບການປຸກສ້າງໂຮງຮຽນ ຢ່າງເປັນທາງການຢູ່ໃນ ສປປ ລາວ. ຜູ້ສະເໜີ ໂຄງການ ແລະ ຜູ້ຈັດຕັ້ງປະຕິບັດ ໄດ້ເລີ້ມຮ່າງ ປຶ້ມຄູ່ມື ໃນການເຄື່ອນໄຫວກິດຈະກຳຕ່າງໆໃນການກໍ່ສ້າງໂຮງຮຽນ ໃນ ສປປ ລາວ, ແຕ່ກໍ່ຍັງບໍ່ທັນມີເອກະສານ ໃດທີ່ຖືກຮັບຮອງເປັນທາງການເທື່ອ.

ຍ້ອນວ່າບັນດາໂຮງຮຽນຍັງມີຄວາມ ຕ້ານທານຕ່ຳຕໍ່ ໄພພິບັດ ແລະເພື່ອ ສອດຄ່ອງກັບ ໂຄງການ ການເຊື່ອມໂຍງ ການຫລຸດຜ່ອນ ຄວາມສ່ຽງໄພພິບັດຢູ່ໃນຂະແໜງການສຶກສາໃນ ສປປ ລາວ, ກະຊວງ ສຶກສາທິການ ຮ່ວມກັບ ສູນກຽມພ້ອມຕອບໂຕ້ ໄພພິບັດແຫ່ງອາຊີ (ADPC), ອົງການສະຫະປະຊາຊາດ ເພື່ອການພັດທະນາ (UNDP) ແລະ ອົງການຊ່ວຍເຫລືອດ້ານມະນຸດສະທຳຂອງຄະນະກຳມາທິການເອີຣົບ (ECHO) ໄດ້ ສ້າງ ປຶ້ມຄູ່ມືສະບັບນີ້, ເຊິ່ງເປັນການຮວບຮວມ ເອົາປະສົບການ ແລະ ບົດຮຽນ ຈາກຫລາຍໂຄງການ ໂດຍຜູ້ມີປະສົບການຕ່າງໆ ທີ່ ໄດ້ມີສ່ວນຮ່ວມເຂົ້າໃນການປຸກສ້າງໂຮງຮຽນໃນ ຫລາຍໆປີ ທີ່ຜ່ານມາໃນ ສປປ ລາວ.

ນີ້ແມ່ນປຶ້ມຄູ່ມືທີ່ງ່າຍ ສຳຫລັບການກໍ່ສ້າງໂຮງຮຽນ ທີ່ສ້າງຂຶ້ນໂດຍ ກະຊວງສຶກສາທິການ ເພື່ອໃຫ້ແທດເໝາະ ກັບສະພາບ ຢູ່ໃນ ສປປ ລາວ ແລະ ໄດ້ ອີງໃສ່ ລາຍລະອຽດ ກ່ຽວກັບ ການກໍ່ສ້າງ ອາຄານທີ່ມີ ແລ້ວໃນປະເທດ. ໜັງສືເຫລັ້ມນີ້ ເປັນເອກະສານທີ່ ແນໃສ່ ເພື່ອ ຮັບປະກັນ.ໃຫ້ບັນດາ ໂຮງຮຽນທີ່ ຈະຖືກສ້າງ ຂຶ້ນ ໃນອະນາຄົດແມ່ນຈະສ້າງຕາມວິທີການ ທີ່ເປັນການຫລຸດຜ່ອນ ຄວາມສ່ຽງ ແລະຄວາມເສັຍ ຫາຍ ຈາກໄພພິບັດ ທາງທຳມະຊາດ, ຕໍ່ນັກຮຽນ, ຄູອາຈານ, ພະນັກງານ ແລະ ຜູ້ ຢູ່ອາໃສອື່ນໆ.

1.2 ກຸ່ມເປົ້າໝາຍ

ປຶ້ມຄູ່ມື ແນະນຳ ສະບັບ ນີ້ແມ່ນໄດ້ຖືກອອກແບບມາເພື່ອໃຫ້ ບັນດາຜູ້ຖືຜົນປະໂຫຍດຮ່ວມກັນ ທີ່ມີສ່ວນ ຮ່ວມໃນການ ກໍ່ສ້າງໂຮງຮຽນໃນເຂດຊົນນະບົດ ແລະ ຕົວເມືອງ ໃນ ສ.ປ.ປ ລາວ, ລວມທັງ ນັກວິຊາ ການ ແລະ ພະນັກງານທົ່ວໄປ. ກອມລວມ ເອົາ ບັນດາຜູ້ຖືຜົນປະໂຫຍດຮ່ວມກັນ ທຸກຄົນ ນັບ ແຕ່ ລະດັບຊຸມຊົນໄປເຖິງຂັ້ນກະຊວງ, ຊຶ່ງລວມມີ ຫ້ອງການສຶກສາທິການເມືອງ (DEB), ພະແນກ ສຶກສາທິການ ແຂວງ (PES), ໜ່ວຍງານກໍ່ສ້າງ ຂອງ ພະແນກ ສຶກສາທິການແຂວງ (PUCDA), ບັນດາອົງການທີ່ກ່ຽວຂ້ອງ ແລະ ຜູ້ໃຫ້ການຊ່ວຍເຫລືອ.

1.3 ວິທີການນຳໃຊ້ປຶ້ມຄູ່ມື

ຜູ້ນຳໃຊ້ ປຶ້ມຄູ່ມືເຫລັ້ມນີ້ຈະຮູ້ທິດທາງທີ່ຄວນເອົາໃຈໃສ່, ໃນແຕ່ລະຂັ້ນຕອນຂອງການວາງແຜນ, ການອອກ ແບບ ແລະ ການປຸກສ້າງໂຮງຮຽນ. ສະບັບທີ່ສົມບູນຂອງ ປຶ້ມຄູ່ມືໄດ້ລວມມີ ເອກະສານພາກຜະໜວກ ພ້ອມບັນຊີລາຍການຕ່າງໆ ແລະ ແບບຟອມ ທີ່ຈຳເປັນໃນການດຳເນີນການ. ເຖິງຢ່າງໃດກໍ່ຕາມ, ປຶ້ມຄູ່ມື ເຫລັ້ມນີ້ກໍ່ບໍ່ສາມາດທົດແທນຜູ້ທີ່ມີຄວາມຊ່ຽວຊານເຊັ່ນ: ນັກສະຖາປະນິກ ແລະ ນັກວິສະວະກອນ, ເຊິ່ງ ເປັນຜູ້ມີຄວາມຮູ້ດ້ານວິຊາການທີ່ຈຳເປັນໃນການຮັບປະກັນຄວາມປອດໄພຂອງໂຮງຮຽນ.

1.4 ການກໍ່ສ້າງໂຮງຮຽນທີ່ມີຄຸນນະພາບ

ຈຸດປະສົງ ຂອງ ກິດຈະກຳ ການກໍ່ສ້າງໂຮງຮຽນແມ່ນເພື່ອຈັດສັນເນື້ອທີ່ໃຫ້ ເໝາະສົມດີ ແລະ ພຽງພໍ ເພື່ອໃຫ້ ເປັນໂຮງຮຽນ ທີ່ດີ, ເຊິ່ງ ເປັນບ່ອນທີ່ເປັນເພື່ອນໃຫ້ແກ່ເດັກນ້ອຍ ແລະການຮຽນຮ່ວມ. ຈຸດ ປະສົງເພີ້ມເຕີມມີຄື:

- ດຶງດູດນັກຮຽນ (ຂະຫຍາຍ ໂອກາດ ໃນການເຂົ້າຮຽນ);
- ປັບປຸງອັດຕາການ ເຂົ້າຮຽນ;
- ປັບປຸງອັດຕາການ ຄ້າງຫ້ອງ ແລະອັດຕາການຈົບຊັ້ນ;
- ປັບປຸງໃຫ້ປະສົບຜົນສຳເລັດໃນການຮ່ຳຮຽນ;
- ໃຫ້ມີ ສະພາບແວດລ້ອມທີ່ປອດໄພ, ມີການຮຽນຮ່ວມບໍ່ມີການຈຳແນກ ແລະ ມີບັນຍາກາດການ ຕ້ອນຮັບທີ່ດີໃຫ້ແກ່ນັກຮຽນ;
- ໃຫ້ມີ ສະພາບແວດລ້ອມທີ່ເອື້ອອຳນວຍໃຫ້ແກ່ການຮ່ຳຮຽນ; ເຊິ່ງລວມເອົາທັງນັກຮຽນ ທີ່ພິການທາງດ້ານຮ່າງກາຍ ແລະ ຈິດໃຈ/ການຮຽນຮູ້ ຫລືຮຽນໄດ້ຊ້າ ;
- ປູກຝັງ ແລະສຶກສາໃຫ້ມີຄວາມສາມັກຄີກົມກຽວລະຫວ່າງ ໂຮງຮຽນ ແລະ ຊຸມຊົນຂອງເຂົາເຈົ້າ ເອງ.

ປຶ້ມຄູ່ມື ຊຸດນີ້ ແມ່ນເອກະສານທີ່ ໃຫ້ຄວາມຮູ້ ກ່ຽວກັບມາດຕະຖານ ແລະການແນະແນວ ເພື່ອກ້າວໄປຫາຈຸດປະສົງ ຂອງໂຮງຮຽນຄຸນນະພາບ, ການຮຽນຮ່ວມ, ໂຮງຮຽນ ເພື່ອນ ເດັກ ແລະໂຮງຮຽນທີ່ປອດໄພ ສຳລັບ ເດັກນ້ອຍໃນ ສປປ ລາວ.

ພາກ 2.

ມາດຕະຖານຄວາມປອດໄພ ແລະ ການຫລຸດຜ່ອນຄວາມສ່ຽງ

2.1 ສະຖານທີ່

ປະເທດລາວເປັນປະເທດທີ່ເຕັມໄປດ້ວຍພູຜາປະດົງ, ພູສູງກວ່າ 500 ແມັດ, ມີລັກສະນະພິເສດມີຜາສູງ ຊັນ ແລະ ເທວເລິກ. ເຖິງແມ່ນວ່າໃນທາງພູມສາດ ຫລື ທາງພູມສັນຖານປະເທດລາວມີຄວາມສູງປົກ ປ້ອງບັນດາພາຍຸໃຕ້ຝຸ່ນ ແລະ ລົມພາຍຸ, ແຕ່ວ່າປະເທດລາວກໍ່ຍັງຕ້ອງປະເຊີນກັບໄພອັນຕະລາຍ ຕ່າງໆ, ເຊິ່ງໃນນັ້ນ ໄພນ້ຳຖ້ວມ ແລະ ຄວາມແຫ້ງແລ້ງເປັນໄພອັນຕະລາຍທີ່ຮ້າຍແຮງທີ່ສຸດ. ໄພອັນຕະລາຍຍັງມີ ໄຟໄໝ້, ດິນເຈື່ອນ, ການເຊາະເຈື່ອນຂອງດິນ ແລະ ແຜ່ນດິນໄຫວ. ນອກນັ້ນ ຍັງມີໄພອັນຕະລາຍຈາກ ການເກີດໜູຂີລະບາດ ແລະ ໂລກລະບາດຂອງສັດ ແລະຄົນ, ແລະ ລະເບີດທີ່ຍັງບໍ່ທັນແຕກເຊິ່ງມັນເປັນ ຜົນກະທົບຕໍ່ຊຸມຊົນ. ໂດຍພື້ນຖານແລ້ວ ໄຟໄໝ້, ນ້ຳຖ້ວມ, ພາຍຸ ແລະ ແຜ່ນດິນໄຫວແມ່ນມັກເກີດຢູ່ ປະ ເທດເຮົາເປັນປະຈຳ.

ໄພອັນຕະລາຍຫລັກ:

ໂດຍປົກກະຕິໄພນ້ຳຖ້ວມມັກເກີດຂຶ້ນຕາມທົ່ງພຽງລຽບແມ່ນ້ຳຂອງ ແລະ ແມ່ນ້ຳສາຂາ ເຊິ່ງມັກເກີດຂຶ້ນ ໃນຊ່ວງເດືອນ ພຶດສະພາ ເຖິງ ເດືອນ ກັນຍາ ເພາະມັນແມ່ນຊ່ວງລະດູລົມມໍລະສຸມ. ເຂດທີ່ມີຜົນກະທົບ ຫລາຍກວ່າໝູ່ແມ່ນເຂດພາກກາງ ແລະ ເຂດພາກໃຕ້, ເຊິ່ງເປັນເຂດຂະຫຍາຍຕົວທາງດ້ານເສດຖະກິດທີ່ ສຳຄັນທີ່ສຸດຂອງປະເທດ ແລະເປັນບ່ອນອາໃສຂອງ ປະຊາກອນ ຈຳນວນ 53%. ພາຍຸໃຕ້ຝຸ່ນທີ່ເຂົ້າມາສູ່ ປະເທດເຮົາແມ່ນມາຈາກທາງຕາເວັນອອກ ຊຶ່ງເຮັດໃຫ້ມີປະລິມານຝົນຕົກຫລາຍ ແລະ ເປັນເຫດໃຫ້ເກີດ ນ້ຳຖ້ວມ. ເຂດທີ່ ປະສົບກັບໄພແຫ້ງແລ້ງຫລາຍກ່ວາໝູ່ ແມ່ນບັນດາແຂວງທີ່ຢູ່ພາກຕາເວັນຕົກ ແລະ ບາງ ແຂວງພາກໃຕ້ທີ່ມີລະດັບສູງ.

ຍິ່ງໄປກວ່ານັ້ນ, ໃນໄລຍະ 10 ປີທີ່ຜ່ານມາການປ່ຽນແປງຂອງດິນຟ້າອາກາດ ແລະ ສະພາບແວດ ລ້ອມໃນເຂດປະເທດ, ຮ່ວມທັງການກະທຳຂອງມະນຸດກໍ່ເປັນສາເຫດໜຶ່ງທີ່ເຮັດໃຫ້ເກີດບັນຫາຮ້າຍ ແຮງຂຶ້ນ. ຄວາມເສື່ອມໂຊມກ່ຽວກັບສະພາບແວດລ້ອມໂດຍເປັນຜົນມາຈາກ ການຕັດໄມ້ທຳລາຍປ່າຫລາຍ ເກີນໄປ, ການຖາງປ່າເຮັດໄຮ່, ຈູດປ່າເພື່ອການເພາະປູກ, ການໃຊ້ສານເຄມີ ແລະ ປຸ໋ຍເຮັດໃຫ້ເພີ່ມຄວາມ ຕ້ານທານຕ່ຳ ຂອງປະຊາຊົນ ແລະ ແລະ ເພີ່ມທະວີການສູນເສຍເນື່ອງຈາກໄພພິບັດ.

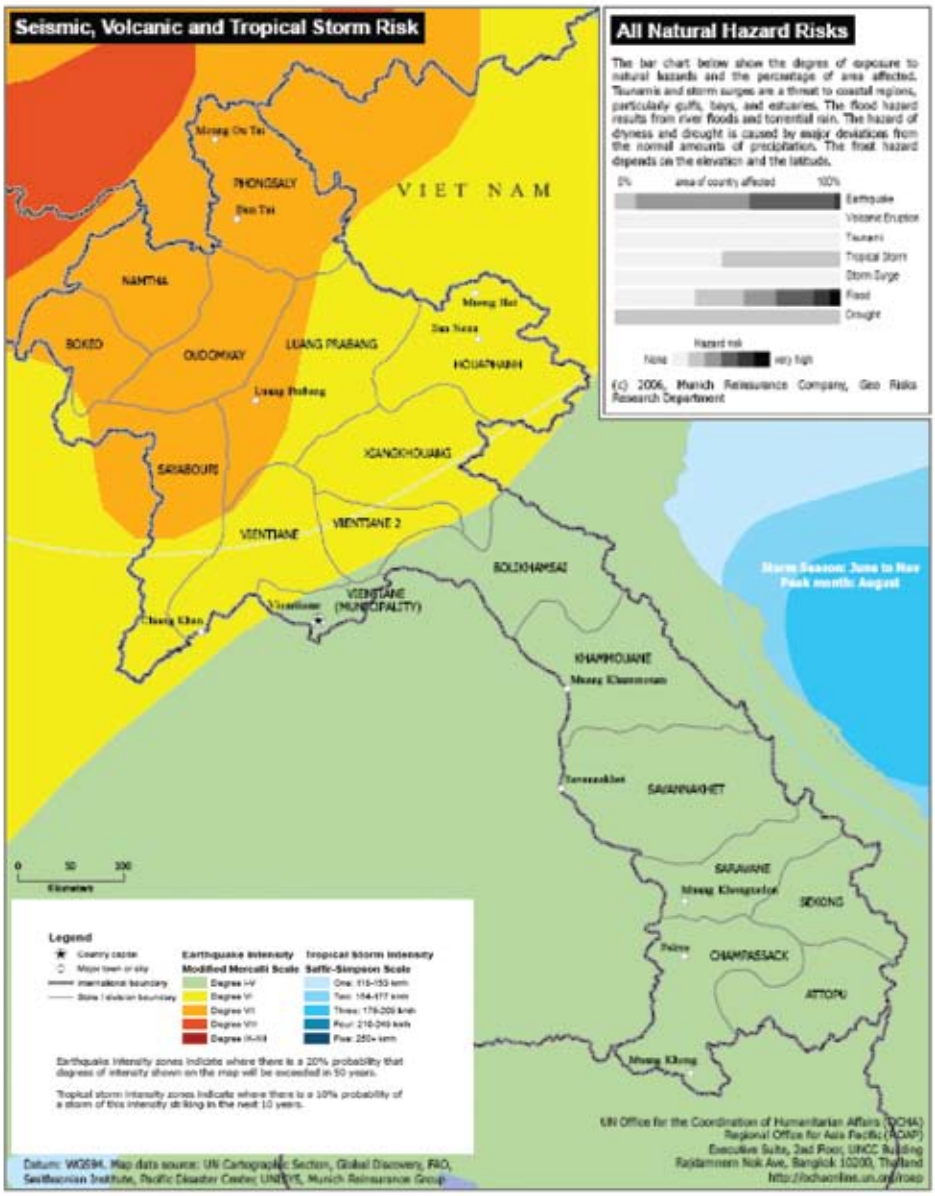
ປະຊາຊົນສ່ວນຫລາຍແມ່ນອາໄສຢູ່ເຂດທົ່ງພຽງທີ່ມີນ້ຳຖ້ວມເຊິ່ງເຮັດໃຫ້ພວກເຂົາສ່ຽງຕໍ່ໄພນ້ຳຖ້ວມທຸກໆ ປີ. ອັດຕາການຂະຫຍາຍຕົວຂອງປະຊາກອນທີ່ສູງເປັນການ ເພີ້ມພາລະແກ່ ເງື່ອນໄຂ ທາງດ້ານສະພາບ ແວດລ້ອມ.

ເຖິງແມ່ນວ່າຈະບໍ່ມີການບັນທຶກໄວ້ຢ່າງເປັນທາງການ, ຂໍ້ມູນ ບັນທຶກຈາກບັນດາປະເທດເພື່ອນບ້ານ ສະ ແດງໃຫ້ເຫັນວ່າໄລຍະປີ ຜ່ານມາໄດ້ເກີດມີແຜ່ນດິນໄຫວຂະໜາດນ້ອຍຫລາຍເທື່ອແລ້ວທີ່ໄດ້ສົ່ງຜົນກະທົບ ມາໃຫ້ປະເທດລາວຂອງພວກເຮົາ.

2.1.1 ເຂດກ່ຽວກັບດິນຟ້າອາກາດ

ປະເທດລາວມີ 2 ລະດູ ທີ່ຊັດເຈນຄື: ມໍລະສຸມ ເຂດຮ້ອນ ທີ່ຢູ່ຕາມທົ່ງພຽງ (ລະດູຝົນ) ແລະ ລະດູ ຮ້ອນທີ່ຢູ່ຕາມເຂດພູເຂົາສູງລະດັບ ເໜືອຫນ້ານ້ຳທະເລ 1000 ແມັດ.

2.1.2 ບໍລິເວນທີ່ມີໄພອັນຕະລາຍຈາກທຳມະຊາດ



ຮູບທີ 1. ສປປ ລາວ: ຄວາມສ່ຽງໄພອັນຕະລາຍຈາກທຳມະຊາດ. OCHA ສຳລັບຂົງເຂດ ອາຊີ ປາຊີຟິກ

ຮູບທີ 2. ອ່າງນ້ຳຖ້ວມ ຈາກແມ່ນ້ຳຂອງ. OCHA ສຳລັບຂົງເຂດ ອາຊີ ປາຊີຟິກ http://www.reliefweb.int

2.1.3 ຜົນກະທົບດ້ານການພາບ ຂອງໄພພິບັດ ຕໍ່ຂະແໜງການສຶກສາ

ຕັ້ງແຕ່ປີ 2002 ຫາ 2005 ມີໂຮງຮຽນຈຳນວນ 103 ຫລັງ ທີ່ຖືກຜົນກະທົບຈາກໄພນ້ຳຖ້ວມ ແລະ ມີ ໂຮງຮຽນ 60 ຫລັງ ຖືກຜົນກະທົບຈາກພາຍຸ, ຢ່າງໃດກໍ່ຕາມ ພາກສ່ວນທີ່ຖືກກະທົບຮ້າຍແຮງຫລາຍທີ່ສຸດ ແມ່ນ ຫລັງຄາ, ພື້ນ ແລະ ຝາ (iii). ແຕ່ ປີ 2000 ຫາ 2007, ຈາກການບັນທຶກ ເຫດການໄດ້ ໃຫ້ ຮູ້ວ່າ ໂຮງຮຽນ 2 ຫລັງ ຢູ່ ແຂວງວຽງຈັນ ແລະ ຫ້ອງຮຽນ 1 ຫ້ອງ ຢູ່ ແຂວງ ຫົວພັນໄດ້ ຖືກ ເສັຍຫາຍ ຍ້ອນ ຜົນກະທົບຈາກໄຟໄຫມ້.

2.2 ທີ່ຕັ້ງ

ບັນດາ ຊຸມຊົນ ແມ່ນ ເປັນທ່າແຮງ ໃນການວາງແຜນສຳຫລັບໂຮງຮຽນທີ່ຈະສ້າງຂຶ້ນໃນອະນາຄົດ. ຂັ້ນຕອນໃນ ການສ້າງແຜນທີ່ການສຶກສາ ແລະ ແຜນການຈຸນລະພາກ ເປັນພື້ນຖານໃນການສະຫນອງ ອາຄານຂອງໂຮງຮຽນ (ເບິ່ງຂໍ້ມູນເພີ່ມເຕີມ ໃນບົດທີ່ 6. ຂັ້ນຕອນການວາງແຜນ ແລະ ການປະຕິບັດ) ພ້ອມ ນັ້ນຈຳເປັນຕ້ອງໄດ້ລວມເອົາ ບັນດາບັນຫັດຖານດັ່ງລຸ່ມນີ້:

2.2.1 ບັນດາບັນຫັດຖານໃນການເລືອກທີ່ຕັ້ງ

ການຄັດເລືອກສະຖານທີ່ຕັ້ງທີ່ຮອບຄອບແມ່ນຂັ້ນຕອນທີ່ສຳຄັນສຳລັບ ການປຸກສ້າງໂຮງຮຽນທີ່ໝັ້ນຄົງ ຖາວອນ. ສິ່ງກໍ່ສ້າງ ທີ່ຢູ່ເຂດທີ່ມີໄພທຳມະຊາດ ແມ່ນມີຄວາມສ່ຽງທີ່ຈະຖືກກະທົບໄດ້ງ່າຍຈາກ ໄພນ້ຳຖ້ວມ, ດິນເຈື່ອນ, ລົມພາຍຸໃຕ້ຝຸ່ນ ແລະ ອື່ນໆ. ດັ່ງນັ້ນການປະເມີນຜົນຂອງຄວາມສ່ຽງທີ່ອາດເປັນໄປໄດ້ຂອງສະຖານ ທີ່ຕັ້ງແມ່ນມີຄວາມສຳຄັນຫລາຍໃນການຫລຸດຜ່ອນຄວາມສ່ຽງຂອງໄພພິບັດ. ສິ່ງທີ່ທ້າທາຍອີກສິ່ງຫນຶ່ງອີກແມ່ນ ຊາວບ້ານອາດຈະບໍ່ເຫັນດີກ່ຽວກັບ ສະຖານທີ່ຕັ້ງ ຂອງໂຮງຮຽນໃຫມ່ດ້ວຍຫລາຍເຫດຜົນ ເຊັ່ນ ເລື່ອງປະຫວັດສາດ ຂອງສະຖານທີ່ຕັ້ງນັ້ນໆ ຫລື ເຫດຜົນທາງດ້ານ ວັດທະນະທຳສັງຄົມອື່ນໆ. ເພື່ອຈະເລືອກ ທີ່ຕັ້ງທີ່ເຫມາະສົມຂອງໂຮງຮຽນ, ຕ້ອງມີຫລາຍໆເງື່ອນໄຂທີ່ຄວນຈະພິຈາລະນາ ແລະ ປຶກສາຫາລືກັບອຳນາດ ການປົກຄອງ ແລະ ຊຸມຊົນໃນທ້ອງຖິ່ນນັ້ນໆ .

ປັດໃຈສຳຄັນໃນການພິຈາລະນາການເລືອກທີ່ຕັ້ງ ບ່ອນ ປຸກສ້າງ ມີຄື:

ທາງດ້ານສັງຄົມ:

- ຮັບປະກັນວ່າ ຊຸມຊົນ ຍອມຮັບຕໍ່ສະຖານທີ່ດັ່ງກ່າວເປັນບ່ອນປຸກສ້າງໄດ້.
- ພິຈາລະນາເຖິງການຕັ້ງຖິ່ນຖານ ຂອງໝູ່ບ້ານໃກ້ຄຽງເຊິ່ງແຕກຕ່າງຊົນເຜົ່າກັນ ຈະເປັນບັນຫາບໍ່? ຂຶ້ນກັບ ແຕ່ລະກໍລະນີ ເຊັ່ນ:ພະແນກສຶກສາທິການແຂວງ ຫລື ຫ້ອງການສຶກສາທິການເມືອງ, ຕ້ອງໄດ້ກວດ ຄືນ ເຖິງການຕັ້ງຖິ່ນຖານ ຂອງ ຊົນເຜົ່າ ທີ່ແຕກຕ່າງກັນນັ້ນ ວ່າຈະເປັນບັນຫາ ກີດຂວາງ ຕໍ່ການກໍ່ສ້າງ ໂຮງຮຽນ.
- ໂຮງຮຽນຄວນຈະຕັ້ງຢູ່ໃກ້ກັບໝູ່ບ້ານນັ້ນໆ ເພື່ອໃຫ້ນັກຮຽນ ມີຄວາມສະດວກສະບາຍໃນການໄປມາ ໂດຍບໍ່ ໄດ້ເດີນທາງໄກ ແລະ ເຮັດໃຫ້ໂຮງຮຽນກາຍເປັນສ່ວນຫນຶ່ງຂອງໝູ່ບ້ານນັ້ນອີກດ້ວຍ.
- ທີ່ຕັ້ງຂອງໂຮງຮຽນຄວນມີໄລຍະທາງ ທີ່ເດັກນ້ອຍນັກຮຽນສາມາດຍ່າງໄດ້. ໄລຍະທາງຍ່າງ ທີ່ໄກ ທີ່ສຸດ ລະຫວ່າງ ບັນດາເຮືອນເດັກນ້ອຍ ແລະ ໂຮງຮຽນ ຄວນໃຊ້ເວລາຍ່າງພຽງແຕ່ 45 ນາທີສູງສຸດ (iv).

ດ້ານ ຫລັກການ:

- ໃຫ້ແນ່ໃຈວ່າມີໃບຕາດິນ
- ຄະນະກຳມະການຂັ້ນບ້ານຕ້ອງໄດ້ຢັ້ງຢືນເຖິງເຈົ້າຂອງກຳມະສິດທີ່ດິນ ແລະ ເອກະສານອ້າງອີງຂອງ ໂຮງຮຽນແມ່ນມີຈິງ. ເຮັດໃຫ້ແຈ່ມແຈ້ງແມ່ນໃຜເປັນເຈົ້າຂອງທີ່ດິນ ເພື່ອຫລີກຫລ່ຽງບັນຫາຂັດແຍ້ງ, ແລະ ການໄລ່ທີ່ ຫລື ທວງເອົາຄືນ ທີ່ອາດຈະເປັນບັນຫາເກີດຂຶ້ນໃນອະນາຄົດ.
- ເຮັດໃຫ້ ຈະແຈ້ງກັບບັນດາອຳນາດການປົກຄອງທ້ອງຖິ່ນກ່ຽວກັບ ການອະນຸຍາດ ແລະ ການອະນຸມັດໃນ ການປຸກສ້າງ.
- ສຳຫລັບການອະນຸມັດຕັ້ງໂຮງຮຽນປະຖົມ, ຢ່າງໜ້ອຍ ຕ້ອງມີ ເດັກນ້ອຍນັກຮຽນຢ່າງຕ່ຳ 32 ຄົນ.
- ໂຮງຮຽນທີ່ສົມບູນຄວນຈະປະກອບມີທຸກໆລະດັບຂັ້ນຮຽນ ຄື: 5 ຂັ້ນຮຽນໃນໂຮງຮຽນປະຖົມສຶກສາ, 4 ຂັ້ນຮຽນໃນໂຮງຮຽນມັດທະຍົມຕອນຕົ້ນ (ເລີ້ມໃນປີ 2009) ແລະ 3 ຂັ້ນຮຽນໃນໂຮງຮຽນມັດທະຍົມ ຕອນປາຍ.

ດ້ານ ວິຊາການ:

- PUCDA ຕ້ອງຢືນຢັນວ່າສະພາບ ແລະ ຄວາມຕ້ອງການດ້ານວິຊາການສຳລັບນ້ຳປະປາ, ສຸກຂາພິບານ, ລະບົບບຳບັດ, ໄຟຟ້າ (ຖ້າມີ) ໃນສະຖານທີ່ດັ່ງກ່າວ ແລະ ກະກຽມບົດລາຍງານ.
- ຜູ້ກໍ່ສ້າງຕ້ອງກວດກາເບິ່ງລະບົບການຕໍ່ນ້ຳຕົວຈິງທີ່ມີຢູ່ຊຸມຊົນ/ສາທາລະນະ. ປະເມີນ ສະພາບແລະ ມາດຕະການທີ່ຕ້ອງການ ເພື່ອ ຕໍ່ລະບົບທໍ່ນ້ຳ ໃສ່ ກັບສາຍຫລັກ ຂອງ ສາທາລະນະ.
- ຕ້ອງແນ່ໃຈວ່າການເລືອກສະຖານທີ່ແມ່ນມີເນື້ອທີ່ພຽງພໍໃນການຂະຫຍາຍຕົວ ແລະສິ່ງອຳນວຍຄວາມສະດວກອື່ນໆໃນເດີ່ນ.
- ໃນເຂດພູເຂົາຕ້ອງການບໍ່ຄວນ ປຸກຍັບເລິກເຂົ້າໄປໃກ້ໃນດິນຕັດ ເນີນພູ, ເຊິ່ງອາດເຮັດໃຫ້ຝາພັງທະລາຍຍ້ອນນ້ຳເຊາະແລະແຮງດັນທາງຂ້າງ.
- ຖ້າຫາກບໍ່ສາມາດຫລີກລ້ຽງບ່ອນ ຄ້ອຍພູໄດ້ນັ້ນ, ຈະຕ້ອງໄດ້ສ້າງ ພື້ນແທ່ນຮອງຮັບກ່ອນ ແລະ ອາຄານ ຈະຕ້ອງປຸກໃນບ່ອນປອດໄພ ໂດຍຮັບປະກັນ ໃຫ້ຫ່າງຈາກ ຄ້ອຍພູ.
- ໂຮງຮຽນບໍ່ຄວນຕັ້ງໃກ້ຄ້ອຍທີ່ສູງຊັນ ຫລື ໜ້າຜາຊຶ່ງອາດຈະຍຸບຍ້ອນຫີນຕົກທັບ ຫລື ດິນເຈື່ອນ.

ດ້ານ ເສດຖະກິດ:

- ຮູ້ວ່າມີການຈັດຫາດ້ານ ການເງິນ ຫລື ລະບົບການສະໜັບສະໜູນຂອງລັດຖະບານລາວ (ຫລື ຈາກສະຖາບັນ ອື່ນໆ) ຊຶ່ງອາດມີສຳລັບໂຮງຮຽນ.
- ລັດຖະບານຄວນຮັບປະກັນໃຫ້ລາຄາດິນນັ້ນຢູ່ໃນລາຄາຕ່ຳທີ່ສຸດ.
- ໃຫ້ ລວມ ເອົາວຽກຖົມດິນ ແລະບຸກເບີກ ກະກຽມດິນຕ່າງໆ ເຂົ້າໃນງົບປະມານ.
- ພິຈາລະນາລາຍຈ່າຍເພື່ອການຈັດຫາໂຄງສ້າງພື້ນຖານໃນການກໍ່ສ້າງ (ຕົວຢ່າງ: ຖະໜົນຫົນທາງ, ການຕໍ່ນ້ຳ, ລະບົບລະບາຍນ້ຳເສຍ, ລະບົບຕາຂ່າຍໄຟຟ້າ ແລະ ອື່ນໆ).
- ປະເມີນ ອາຄານ ແລະ ໂຄງສ້າງພື້ນຖານທີ່ມີແລ້ວຢູ່ສະໜາມ. ກຳນົດວ່າມີຄວາມຕ້ອງການຮື້ຖອນບໍ່ ຫລື ເປັນທາງເລືອກ ວ່າ ອາຄານເກົ່າອາດ ສາມາດນຳ ໃຊ້, ປະຍຸກໃຫ້ ກົມກືນ ເຂົ້າກັບສິ່ງແວດລ້ອມ, ທັງ ໜົດນັ້ນແມ່ນໃຫ້ລວມເຂົ້າຢູ່ໃນງົບປະມານທີ່ຕັ້ງໄວ້ ເບື້ອງຕົ້ນ.

ດ້ານ ຄວາມປອດໄພ:

- ກຳນົດເສັ້ນທາງໜີໄພເພື່ອ ການຍົກຍ້າຍ ແລະ ທາງເຂົ້າທີ່ສາມາດໃຊ້ໄດ້ໃນກໍລະນີສຸກເສີນ.
- ສັງເກດເບິ່ງວ່າຢູ່ບໍລິເວນໃກ້ຄຽງ ກັບໂຮງຮຽນ ມີສິ່ງກໍ່ສ້າງໃດ ທີ່ ສາມາດໃຊ້ ເປັນທີ່ພັກເຊົາໄດ້ ເພື່ອເປັນບ່ອນຫຼົບໄພໃນກໍລະນີສຸກເສີນ.
- ຈຸດຕັ້ງອາຄານຄວນຈະຕັ້ງຫ່າງໄກຈາກບ່ອນນ້ຳຂັງຢ່າງໜ້ອຍ 10 ແມັດ, ເພາະມັນອາດເປັນບ່ອນເພາະພັນຂອງຍຸງ ແລະ ເປັນບໍ່ເກີດຂອງ ແມ່ພະຍາດຕິດຕໍ່.. ພິຈາລະນາວ່າມີ ບໍ່ເກີດຂອງ ນ້ຳຂັງຕາມລະດູການ ເຊ່ນ ຮ່ອງ ຫ້ວຍ ຫຼື ໜອງ..
- ປະເມີນຄວາມສ່ຽງຈາກໄພອັນຕະລາຍທາງທຳມະຊາດ (ຕົວຢ່າງ: ຄື້ນນ້ຳສູງທີ່ເກີດຈາກພາຍຸພັດ, ດິນເຈື່ອນ, ຝົນຕົກແຮງ, ແຜ່ນດິນໄຫວ ແລະ ພາຍຸໃຕ້ຝຸ່ນ) ແລະ ຫລີກຫຼ່ຽງການກໍ່ສ້າງໃນເຂດດັ່ງກ່າວ (ເບິ່ງ 2.1.2). ສ່ວນນຶ່ງຂອງການປະເມີນ ແມ່ນການກວດສອບ ເຫດການ ນ້ຳຖ້ວມ ແລະ ຂໍ້ມູນຕ່າງໆທີ່ເປັນທາງການ. ພ້ອມກັນນັ້ນກໍ່ຕ້ອງສອບຖາມ ຂໍ້ມູນຈາກຊຸມຊົນເຖິງຄວາມຖີ່ຂອງຝົນຕົກ, ລົມພາຍຸ ແລະ ໄຟປ່າ. ຄວນສຶກສາ ບົດລາຍງານການປະເມີນ ໄພທຳມະຊາດທີ່ເຄີຍໄດ້ເຮັດມາກ່ອນ.
- ກຳນົດວ່າ ມີຄວາມຕ້ອງການ ກໍ່ສ້າງຫຍັງເພີ່ມອີກເພື່ອເຮັດໃຫ້ພື້ນທີ່ດິນຂອງໂຮງຮຽນ ສາມາດພັດທະນາຕໍ່ໄປໄດ້ ຫຼື

- ການນຳໃຊ້ທີ່ດິນໃນເຂດນັ້ນ ຄວນຖືກຈຳກັດ ເພື່ອຫຼຸດຜ່ອນຄວາມຕ້ານທານຕ່ຳ ຈາກໄພອັນຕະລາຍທາງ ທຳມະຊາດ.

ຖ້າຫາກເປັນພື້ນທີ່ທີ່ມີຄວາມສ່ຽງສູງ, ໃຫ້ພິຈາລະນາເຖິງທີ່ຕັ້ງໃໝ່ ທີ່ ຫລຸດຜ່ອນຄວາມສ່ຽງ ເພື່ອເປັນທາງ ເລືອກ. ທັງນີ້ຈະຕ້ອງກຳນົດໃຫ້ຊັດເຈນໂດຍອຳນາດການປົກຄອງທ້ອງຖິ່ນ ແລະອີງຕາມເງື່ອນໄຂທາງດ້ານພື້ນ ທີ່ທີ່ມີ ແລະດ້ານເສດຖະກິດ (v).

- ປະເມີນ ພູມສັນຖານ ບ່ອນປຸກສ້າງ ຕົວຢ່າງ ນຳໃຊ້ ຮາກຖານຫີນຕື້ນເພື່ອປ້ອງກັນຄືນ ຈາກແຜ່ນດິນ ໄຫວ.
- ໃນຂົງເຂດ ທີ່ມີຄວາມສ່ຽງຕໍ່ນ້ຳຖ້ວມ, ຄວນສ້າງໂຮງຮຽນຢູ່ ພື້ນທີ່ທີ່ຍົກຂຶ້ນສູງ. ຖ້າບໍ່ມີບ່ອນ ດິນສູງ ແມ່ນຈະຕ້ອງໄດ້ຍົກລະດັບພື້ນອາຄານຂຶ້ນສູງ.
- ໃນເຂດພູເຂົາ ຈະຕ້ອງໄດ້ກວດສອບຄວາມໝັ້ນຄົງຂອງຄ້ອຍເນີນພູ (ມູມງ່ຽງ, ປະເພດຂອງດິນ, ຄອງລະບາຍນ້ຳ ແລະ ອື່ນໆ). ປະເມີນ ຄຸນລັກສະນະຂອງດິນ ຊຶ່ງເປັນຂໍ້ມູນທີ່ສຳຄັນເພື່ອການເລືອກ /ການຈຳແນກ ປະເພດຮາກຖານ (ແບບລົງເປັນຈຸດ ຫລື ແບບແຜ່); ຄວາມເລິກສຳລັບການເຈາະຫານ້ຳ ບາດານ, ແລະ ຂຸດຂຸມອາຈົມ (ພື້ນຫີນແຂງແມ່ນບໍ່ ເໝາະສົມ) ຊຶ່ງຕ້ອງໄດ້ເຮັດການວິເຄາະດິນ.
- ພິຈາລະນາຖ້າຫາກມີຄວາມຕ້ອງການຖົມດິນເພື່ອຍົກລະດັບໂຄງສ້າງໃຫ້ສູງກວ່າລະດັບນ້ຳຖ້ວມ; ຮູ້ຄວາມ ເລິກຂອງລະດັບນ້ຳໃຕ້ດິນ. ນີ້ເປັນແຫລ່ງຂໍ້ມູນທີ່ສຳຄັນໃນການກຳນົດ ຄວາມເລິກ ແລະ ຂະໜາດຮາກ ຖານ ແລະ, ໄລຍະຫ່າງລະຫວ່າງ ທີ່ຕັ້ງຂອງຫ້ອງນ້ຳ, ຂຸມວິດ ແລະ ຖັງ/ອ່າງເກັບນ້ຳ.
- ເມື່ອໃດກໍ່ຕາມ ຖ້າ ເປັນໄປໄດ້, ຄວນຫລີກຫລ່ຽງການສ້າງ ຕຶກອາຄານຢູ່ບ່ອນດິນອົມນ້ຳ. ຊຶ່ງຊັ້ນດິນ ດັ່ງກ່າວອາດຈະກາຍເປັນຊັ້ນດິນແຫລວ ແລະ ບໍ່ສາມາດ ຮັບນ້ຳໜັກ ອາຄານໄດ້.
- ໃນເຂດທີ່ເກີດສົງຄາມ ແລະເຂດທີ່ສົງຄາມຍຸດຕິ, ໃຫ້ຫຼີກຫຼ່ຽງພື້ນທີ່ທີ່ມີ ກັບລະເບີດຫລື ລະເບີດທີ່ຍັງບໍ່ທັນ ແຕກ. ຂໍຄວາມ ຊ່ວຍເຫລືອຈາກຜູ້ຊ່ຽວຊານ ຖ້າສົງໄສວ່າມີ ກັບລະເບີດຫຼືລະເບີດທີ່ຍັງບໍ່ທັນແຕກ ຢູ່ບໍລິ ເວນດັ່ງກ່າວ.
- ໃນເຂດທີ່ມີແນວໂນ້ມທີ່ຈະເກີດແຜ່ນດິນໄຫວ (ເຂດພາກເໜືອ) ພະຍາຍາມ ສ້າງອາຄານຢູ່ພື້ນທີ່ ໂລ່ງແລະ ຮາບພຽງ.
- ເລືອກ ທີ່ຕັ້ງບ່ອນ ກໍ່ສ້າງ ທີ່ ມີຊັ້ນດິນແຂງ ຢູ່ ທາງລຸ່ມ. ຄົ້ນການ ເຄື່ອນໄຫວຂອງ ຊັ້ນດິນອ່ອນສາມາດເພີ່ມການສັ່ນສະເທືອນຂອງພື້ນດິນທີ່ເກີດຈາກແຜ່ນດິນໄຫວອາດຈະສົ່ງຜົນຕໍ່ຮາກຖານ ແລະ ໂຄງສ້າງຂອງອາຄານ. ຊັ້ນພື້ນດິນທີ່ອ່ອນສາມາດກາຍເປັນດິນແຫລວໄດ້ງ່າຍ ແລະ ເຮັດໃຫ້ ຮາກຖານໄດ້ຮັບຄວາມເສັຍຫາຍ ແລະ ເປັນສາເຫດ ເຮັດໃຫ້ ຕົວອາຄານຍຸບລົງໄດ້ (vi).

ສິ່ງແວດລ້ອມ

- ຮັບປະກັນໃຫ້ມີຄອງລະບາຍນ້ຳ ຢ່າງເໝາະສົມໃນສະຖານທີ່ ປຸກສ້າງ.
- ກວດເບິ່ງວ່າມີ ຜົນລະປູກແລະພືດພັນທີ່ເກີດ ຢູ່ໃນບໍລິເວນນັ້ນບໍ?. ມີຄວາມຈຳເປັນທີ່ຈະຕ້ອງໄດ້ ເອົາ ຕົ້ນ ໄມ້ ຫລື ພຸ່ມໄມ້ອອກຈາກສະຖານທີ່, ຫລື ວ່າຄວນຈະປູກຕົ້ນໄມ້ໃນບໍລິເວນສະຖານທີ່ກໍ່ສ້າງ ເພື່ອໃຫ້ ອາກາດມີຄວາມຊຸ່ມຊື່ນ ຮົ່ມເຢັນ ແລະ ຄວາມໝັ້ນຄົງຂອງດິນ.
- ສະຖານທີ່ຕັ້ງ ຄວາມຢູ່ຫ່າງໄກຈາກ ແຫລ່ງມົນລະພິດ ແລະເຄມີ ຫລື ວັດສະດຸທີ່ເປັນພິດທີ່ ອາດເປັນຜົນ ສະທ້ອນໃຫ້ ແກ່ສຸຂະພາບ ແລະ ຄວາມປອດໄພຂອງຜູ້ ຢູ່ອາໄສ.
- ໂຮງຮຽນຄວນຈະຕ້ອງຕັ້ງ ຢູ່ ຫ່າງ ຈາກແຫລ່ງທີ່ມີສຽງລົບກວນເກີນຂອບເຂດ ເຊັ່ນ: ສຽງຂອງຍົນບິນ, ການຈາລະຈອນຂອງລົດ, ທາງລົດໄຟ, ສຽງແກດັງ, ເຄື່ອງຈັກຂອງໂຮງງານ ແລະ ອື່ນໆ. ເພື່ອຫລີກລ້ຽງບໍ່

ໃຫ້ສຽງ ລົບກວນ ດັ່ງກ່າວສົ່ງຜົນກະທົບທີ່ເປັນອັນຕະລາຍຕໍ່ເດັກນັກຮຽນ. ສະເຫນີ ແນະ ລະດັບຂອງສຽງ ບໍ່ເກີນ 35 ເດຊິແບລ ຫລື ຕ່ໍາກ່ວານັ້ນ (vii)

- ກໍານົດ ແລະ ປົກປ້ອງ ສະພາບທໍາມະຊາດ ແລະລະບົບນິເວດ ທີ່ມີຢູ່.
- ເຄົາລົບນັບຖື ແລະ ເຊື່ອມເອົາຊັບພະຍາກອນທາງດ້ານ ປະຫວັດສາດ, ວັດທະນະທໍາ ແລະ ສິນລະປະ ເຂົ້າໃນວຽກງານ.

2.2.2 ການສ້າງແຜນຜັງ ສະຫນາມ ກໍ່ສ້າງ

ຫລັງຈາກທີ່ໄດ້ຄັດເລືອກສະຖານທີ່ຕັ້ງທີ່ເໝາະສົມແລ້ວ, ຕ້ອງໄດ້ສ້າງແຜນຜັງລວມ ຂອງບ່ອນກໍ່ສ້າງ, ຕາມທໍາມະດາແລ້ວ ແມ່ນ ທາງ ຊຸມຊົນ ເປັນຜູ ວາງແຜນສ້າງ ບົນພື້ນຖານຂອງຂໍ້ກໍານົດຕ່າງໆ ໃນ ຂໍ້ 2.2.1. ເຊິ່ງປະກອບດ້ວຍເນື້ອໃນຂໍ້ມູນຕ່າງໆທີ່ສໍາຄັນກ່ຽວກັບຄວາມສ່ຽງຕ່າງໆ ທີ່ອາດຈະເກີດຂຶ້ນ, ການຈັດຫາ ກະກຽມສິ່ງອໍານວຍຄວາມສະດວກ. ການຂະຫຍາຍໃນຕໍ່ຫນ້າ , ຖະໜົນຫົນທາງ, ຕົ້ນໄມ້ ແລະພືດພັນ ແລະ ທາງເຂົ້າໄປຫາອາຄານກໍ່ສ້າງ.

ສະເໜີແນະ ໃຫ້ແຕ້ມແຜນທີ່ ໂດຍ ຊຸມຊົນໃນລະຫ່ວາງ ຂັ້ນຕອນຂອງການວາງແຜນ, ເຊິ່ງ ຊາວບ້ານ ທຸກຄົນ ສາມາດສະແດງໃຫ້ເຫັນເຖິງ ຈຸດທີ່ຕັ້ງຂອງໂຮງຮຽນ ກັບຊັບພະຍາກອນທີ່ມີ, ການນໍາໃຊ້ທີ່ດິນ, ຊະນິດ ໂຄງສ້າງ, ອົງການຈັດຕັ້ງ, ການພົວພັນ ແລະ ການຕິດຕໍ່ ພາຍໃນຊຸມຊົນເອງ (ເບິ່ງ ການແນະນໍາ ໃນຂໍ້ທີ່ 6. ຂັ້ນຕອນການວາງແຜນ ແລະ ການຈັດຕັ້ງປະຕິບັດ)

ການວາງແຜນ ທີ່ຮອບຄອບ ແມ່ນມີຄວາມຈໍາເປັນເພື່ອ ວາງທິດທາງ ຂອງການກໍ່ສ້າງໂຮງຮຽນ, ໂດຍ ໃຫ້ ມີໂຄງລ່າງ ພື້ນຖານ (ການວາງທໍ່ ແລະ ການບໍລິການອື່ນໆ) , ການຈັດສັນ ສິ່ງອໍານວຍຄວາມສະດວກ ພາຍໃນເດີ່ນ ແລະ ການເຊື່ອມສານ ຕົ້ນໄມ້ແລະພືດພັນ ທີ່ເຫມາະສົມໃຫ້ເຂົ້າກັບສະພາບແວດລ້ອມຂອງເຂດ ນັ້ນ. ກ່ອນການສ້າງແຜນຜັງ ສະຫນານກໍ່ສ້າງ, ໃຫ້ກວດກາ ເບິ່ງແຜນການພັດທະນາຂອງເມືອງ, ເພື່ອຮັບປະກັນວ່າ ແຜນການກໍ່ສ້າງໂຮງຮຽນ ແມ່ນ ສອດຄ່ອງກັບແຜນການພັດທະນາຂອງເມືອງ. ສິ່ງທີ່ຄວນ ເອົາໃຈໃສ່ ໃນການສ້າງແຜນຜັງ ສະຫນາມ ກໍ່ສ້າງມີ ດັ່ງລຸ່ມນີ້:

- ກວດກາເບິ່ງວ່າມີຄວາມຈໍາເປັນບໍ່ທີ່ຈະສ້າງແຜນຜັງໃຫມ່ ຫລື ແຜນຜັງເກົ່າຍັງສາມາດນໍາໃຊ້ໄດ້ຢູ່?
- ໃຊ້ພູມີປະເທດທາງທໍາມະຊາດ: ເພື່ອວາງທີ່ຕັ້ງຂອງໂຮງຮຽນໃຫ້ຢູ່ ຈຸດທີ່ສູງສຸດ ໃນເດີ່ນປຸກສ້າງ.
- ເພື່ອການປົກປັກຮັກສາ ຊັບພະຍາກອນທາງທໍາມະຊາດ ແລະ ພື້ນທີ່ຫາຍາກ ສໍາລັບການກະສິກໍາ, ການ ປຸກສ້າງອາຄານໂຮງຮຽນຄວນຈະຕັ້ງຢູ່ຈຸດທີ່ເໝາະສົມ ຫລີກລ້ຽງຜົນກະທົບຕໍ່ການນໍາໃຊ້ ທີ່ດິນ ແລະ ໃຊ້ ດິນໃຫ້ກຸ້ມຄ່າທີ່ສຸດ ຕົວຢ່າງ: ດິນເສື່ອມໂຊມໃຫ້ນໍາໃຊ້ເພື່ອການກໍ່ສ້າງອາຄານ ແລະ ສະໜາມກິລາໃນຮົ່ມ. ດິນຄຸນນະພາບ ອັນດັບສອງ ແມ່ນນໍາໃຊ້ ເພື່ອເດີ່ນກິລາກາງແຈ້ງແລະ ດິນ ປູກຝັງ ແມ່ນເພື່ອ ການເຄື່ອນ ໄຫວກິດຈະກໍາ ນອກຫລັກສູດອື່ນໆ ຫລື ປະໄວ້ (viii); ທາງຍ່າງສາມາດໃຊ້ຮ່ວມສໍາລັບຫລາຍໆອາຄານ ເພື່ອຫລຸດຜ່ອນ ເນື້ອທີ່ປູພື້ນໃຫ້ນ້ອຍທີ່ສຸດ ແລະ ອື່ນໆ.
- ສໍາລັບທິດທາງ ຂອງອາຄານ ດ້ານຂ້າງຍາວຄວນວາງຂະໜານກັບທິດຂອງຄ້ອຍ ເພື່ອຫລຸດຜ່ອນການເສຍ ຫາຍທີ່ເກີດຈາກດິນເຈື່ອນໃສ່ ຫລື ເສດສິ່ງຂອງ ທີ່ຈະເຈື່ອນຕົກລົງໃສ່ໃຫ້ນ້ອຍທີ່ສຸດ.
- ຈັດວາງ ອາຄານ ເພື່ອ ໃຫ້ ອາຄານ ໄດ້ ຮັບແສງສະຫວ່າງ ແລະ ລົມລ່ວງ ຈາກທໍາມະຊາດ ໄດ້ ດີ ຄື: ໃນ ເຂດ ທົ່ງພຽງ ສີໜ້າດ້ານ ຕາເວັນອອກ ແລະ ຕາເວັນຕົກຂອງອາຄານ ຄວນຈະມີ ສິ່ງກັນເພື່ອບັງແສງ ແດດ ເພື່ອຫລຸດຜ່ອນຄວາມຮ້ອນຈາກແສງແດດ, ໂດຍສະເພາະຊ່ວງຕອນເຊົ້າ ແລະ ຕອນແລງ, ແລະ ຄວາມຮ້ອນ ໃສ່ຝາດ້ານນອກ, ດັ່ງນັ້ນ ການຫລຸດຜ່ອນ ອຸນຫະພູມພາຍໃນ ຕົວອາຄານ ແລະ ປັບ ຄວາມ ສະດວກສະບາຍຂອງ ຜູ້ຊົມໃຊ້ໂດຍການໃຊ້ ຂໍ້ດີ ໃນການລະບາຍອາກາດ ທໍາມະຊາດ ເຂົ້າອອກ

ຕົວຢ່າງ: ການໃຊ້ ດ້ານຂ້າງທິດຕາເວັນອອກ ແລະ ຕາເວັນຕົກ ຂອງ ອາຄານ ເພື່ອເປັນເຄື່ອງ ກັນຊິນ, ເຮັດເທີບບັງ ບໍລິເວນດ້ານຫນ້າ ໃສ່ ບ່ອນດັ່ງກ່າວ ຂອງຕົວອາຄານ.

- ເຮັດແຜນຜັງ ທີ່ສາມາດຂະຫຍາຍໄດ້ໃນຕໍ່ຫນ້າ, ທາງເຂົ້າໃໝ່ ແລະ ການປັບປຸງ ທີ່ຈຳເປັນ ເພື່ອຕອບສະຫນອງ ຕາມ ການປ່ຽນແປງ ຂອງການຊົມໃຊ້ ແລະ ຄວາມຊິນເຄີຍ ຂອງຜູ້ຊົມໃຊ້.
- ກຳນົດວິທີການແກ້ໄຂອຸບປະສັກ ທີ່ອາດຈະເກີດຂຶ້ນໃນການເຂົ້າອອກໂຮງຮຽນຂອງນັກຮຽນທັງໝົດ (ລວມເຖິງນັກຮຽນທີ່ເປັນ ຄົນພິການ) ແລະຊີ້ບອກໄວ້ຢູ່ໃນ ແຜນຜັງ.
- ທີ່ຕັ້ງ ຄວນຈະເປັນສະຖານທີ່ທີ່ມີທາງເຂົ້າອອກໄດ້ຈາກຖະໜົນສາທາລະນະໂດຍປາດສະຈາກການລັດຜ່ານເຂດແດນຂອງຄົນອື່ນ
- ຫຼຸດຜ່ອນຜົນກະທົບຂອງສຽງລົບກວນ ຈາກພາຍນອກ ດ້ວຍການຈັດວາງຫ້ອງຮຽນ ໃຫ້ໄກຈາກແຫຼ່ງ ເກີດສຽງລົບກວນ ເຊັ່ນ ຖະໜົນ.
- ພິຈາລະນາໄລຍະຫ່າງຂອງທີ່ຕັ້ງ ຂອງນ້ຳສ້າງ ແລະ ຂຸມສ້ວມຖ່າຍໃກ້ສຸດປະມານ 15 ຫາ 20 ແມັດ (ເບິ່ງໃນ ພາກ ນ້ຳປະປາ ແລະ ສຸຂາພິບານ ຕື່ມອີກ.)
- ປະເມີນຄວາມຈຳເປັນໃນການສື່ສານ (ຕົວຢ່າງ: ໂທລະສັບ)
- ຮັກສາ ພືດພັນໄມ້ ທີ່ມີ ເຊັ່ນ: ຕົ້ນໄມ້ ແລະ ປ່າໄມ້ ອື່ນໆ. ວາງແຜນ ປູກຕົ້ນໄມ້ຄືນ, ພືດພັນໄມ້ແມ່ນມີຄວາມສຳຄັນ ໃນການ ໃຫ້ຄວາມຮົ່ມເຢັນສົດຊື່ນ, ພືດພັນໄມ້ ຍັງຊ່ວຍຢັບຢັ້ງໄພທຳມະຊາດຈາກ ນ້ຳຖ້ວມ ແລະ ພາຍຸ. ສາມາດເປັນອາຫານ,ຜະລິດເປັນຜະລິດຕະພັນ ແລະມີຄຸນຄ່າດ້ານຄວາມສວຍງາມ ແລະການພັກຜ່ອນຢ່ອນອາລົມ ກໍ່ຄື ຍົກຄຸນນະພາບໂດຍລວມຂອງເຂດດັ່ງກ່າວໃຫ້ສູງຂຶ້ນ.
- ຮັກສາ ພື້ນທີ່ທີ່ຍັງບໍ່ທັນໄດ້ພັດທະນາ. ຖ້າພໍເປັນໄປໄດ້ ບຸລະນະ ແລະປັບປຸງ ພື້ນທີ່ ທີ ໄດ້ຮັບຜົນເສັຍຫາຍຈາກທຳມະຊາດ.

ແຜນຜັງສະຖານທີ່ຕັ້ງແມ່ນຕ້ອງແຕ້ມໃນມາດຕາສ່ວນ 1:500 ຊຶ່ງລວມມີຂະໜາດທີ່ສຳຄັນຂອງບໍລິເວນ, ອາຄານ ແລະ ສິ່ງອຳນວຍຄວາມສະດວກກາງແປນອື່ນໆ:

- ເລກຫມາຍຈຸດສິ່ງປຸກສ້າງ
- ຂອບເຂດບໍລິເວນ ເນື້ອທີ່ດິນ
- ທີ່ຕັ້ງອາຄານເກົ່າ (ຖ້າມີ)
- ທີ່ຕັ້ງອາຄານໃໝ່ (ລວມມີເສັ້ນແດນ, ຂອບເຂດ)
- ທີ່ຕັ້ງຂອງຫ້ອງນ້ຳນອກ ແລະ ແຫລ່ງນ້ຳ
- ທາງເລືອກເພື່ອການຂະຫຍາຍ ແລະ ຕໍ່ເຕີມໃນອະນາຄົດ
- ທາງເຂົ້າອອກ ແລະ ທາງສຸກເສີນ
- ສິ່ງອຳນວຍຄວາມສະດວກ ໃນເດີ່ນ (ເດີ່ນຫລີ້ນ, ເດີ່ນເຕາະບານ, ບານສົ່ງ ແລະ ອື່ນໆ)
- ຊີ້ ບອກທີ່ຕັ້ງຂອງແມ່ນ້ຳ, ຫີນ, ໄຟຟ້າ,

ເຂດຕັ້ງຖິ່ນຖານຂອງຊຸມຊົນ ແລະ ອື່ນໆ (ຖ້າມີ)

- ເສົາທຸງ ແລະ ທີ່ຕັ້ງປ້າຍໂຮງຮຽນ
- ການຈັດແລະດັດແປງໜ້າດິນໃຫ້ງາມ

ແລະ ສວນຄົວ (ຖ້າມີ)

- ບ່ອນຖິ້ມຂີ້ເຫຍື້ອ

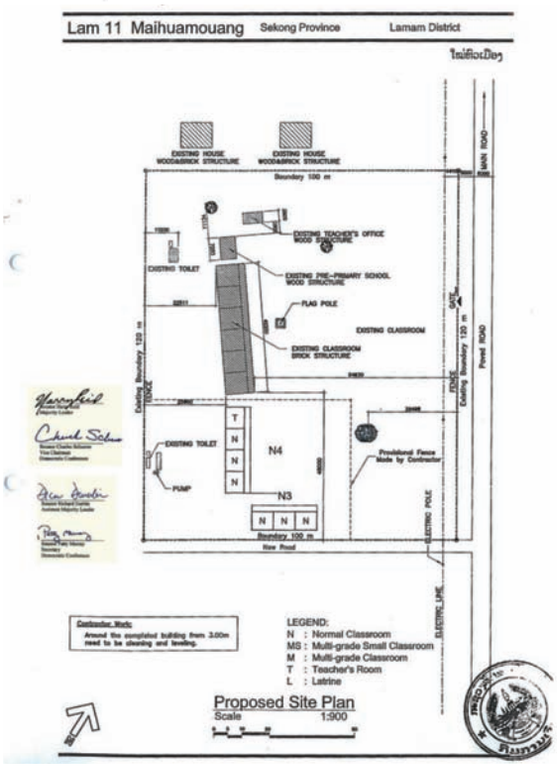


Figure 3. Example of approved site plan. Extracted from ISE Project Sekong Province. Lao PDR. JICS 2009

2.3 ອາຄານ

2.3.1 ຫລັກເກນທີ່ສຳຄັນ

ຫລັກເກນທີ່ສຳຄັນໃນການອອກແບບໂຮງຮຽນທີ່ໝັ້ນຄົງຖາວອນແມ່ນການກຳນົດເອົາຂອບເຂດທີ່ສາມາດຕອບສະໜອງຄວາມຕ້ອງການຂອງຜູ້ຊົມໃຊ້, ເໝາະສົມກັບສະພາບດິນຟ້າອາກາດ ແລະ ພື້ນທີ່ສ່ຽງຕໍ່ໄພທຳມະຊາດຕ່າງໆ (ຕົວຢ່າງ: ນ້ຳຖ້ວມ, ພາຍຸ ແລະ ແຜ່ນດິນໄຫວ). ການອອກແບບໂຮງຮຽນທີ່ດີຈະຕ້ອງມີຜົນກະທົບຕໍ່ສະພາບແວດລ້ອມ ແລະ ມີຄວາມສ່ຽງໄພໜ້ອຍທີ່ສຸດພ້ອມກັນນັ້ນກໍ່ຖືກກັບຄວາມຕ້ອງການຂອງຜູ້ຊົມໃຊ້. ຮູບຮ່າງຂອງໂຮງຮຽນມີຄວາມສຳຄັນສຳລັບຄວາມໝັ້ນຄົງຖາວອນຂອງ ໂຮງຮຽນ. ຮູບຮ່າງຂອງໂຮງຮຽນແມ່ນຕ້ອງສາມາດທົນຕໍ່ ຫຼືຫລຸດຜ່ອນຜົນກະທົບຈາກໄພທຳມະຊາດໃຫ້ນ້ອຍທີ່ສຸດເຊັ່ນ: ນ້ຳຖ້ວມ, ພາຍຸ, ຄື້ນຍັກ ແຜ່ນດິນໄຫວ, ພາຍຸໃຕ້ຝຸ່ນ ແລະ ສະພາບດິນຟ້າອາກາດ.

ຫລັກເກນ ທີ່ສຳຄັນສຳລັບສິ່ງປຸກສ້າງ ທີ່ສາມາດຕ້ານ ກັບພາຍຸໃຕ້ຝຸ່ນ ແລະ ນ້ຳຖ້ວມ

1) ໃຊ້ ການຈັດວາງ ອາຄານແລະພື້ນທີ່ ແລະພູມີປະເທດເພື່ອປ້ອງກັນໂຮງຮຽນ. ໃນການຕ້ານລົມພາຍຸເຮົາກໍ່ອາດໃຊ້ຕົ້ນໄມ້ມາຊ່ວຍຫລຸດຄວາມໄວຂອງແຮງລົມລົງ ແຕ່ຕ້ອງຮັບປະກັນຄວາມປອດໄພວ່າຕົ້ນໄມ້ຈະບໍ່ລົ້ມລົງມາທັບຕົວອາຄານ.
2) ຕ້ອງແນ່ໃຈວ່າອາຄານໂຮງຮຽນແມ່ນຕ້ອງສູງກ່ວາລະດັບພື້ນດິນຢ່າງໜ້ອຍ 60 ຊມ ຖ້າດິນຕອນນັ້ນເປັນໜອງ ແລະມັກເກີດນ້ຳຖ້ວມສູງ ອາຄານຮຽນຕ້ອງຢູ່ສູງຢ່າງນ້ອຍ 30ຊມ ກວ່າລະດັບນ້ຳຖ້ວມສູງສຸດ .
3) ອາດໃຊ້ສິ່ງປຸກສ້າງເຂົ້າໄປປັບເທົ່າເລື່ອງນ້ຳຖ້ວມເຊັ່ນ: ທໍ່ລະບາຍນ້ຳ, ຂົວ, ລະບົບຄອງລະບາຍນ້ຳ, ເຊິ່ງສາມາດຄວບຄຸມລະດັບນ້ຳໃນຊ່ວງລະດູຝົນໄດ້.
4) ຮູບຮ່າງຂອງອາຄານໂຮງຮຽນຈະຕ້ອງ ຫລຸດຜ່ອນ ການບັງລົມ (ເບິ່ງ 3.1. ການອອກແບບທາງ ສະຖາປັດຕະຍະກຳ)
5) ລະດັບຄວາມງ່ຽງຊັນຂອງຫລັງຄາ ຄວນຢູ່ປະມານ 30 ອົງສາ ຫາ 45 ອົງສາ ເພື່ອໃຫ້ແຮງປ້ານລົມຕ່ຳລົງ ແລະ ຫລີກລ້ຽງບໍ່ໃຫ້ຫລັງຄາເປີດ.
6) ແຍກໂຄງສ້າງຂອງລະບຽງອອກຈາກໂຄງສ້າງຫລັກຂອງໂຮງຮຽນ.
7) ປະກອບໂຄງສ້າງຕ່າງໆໃຫ້ແໜ້ນໜາພ້ອມຍຶດແໜ້ນ (ລວມທັງໂຄງຫລັງຄາ), ໃຊ້ຄ້ຳຢັນ.
8) ຍຶດວັດສະດຸມຸງຫລັງຄາໃຫ້ແໜ້ນໜາແລະຮັບປະກັນ.
9) ເອົາໃຈໃສ່ໃນຂະໜາດ ແລະ ຕຳແໜ່ງຂອງຊ່ອງເປີດ: ສຳລັບ ຝາຮັບນ້ຳໜັກ ແມ່ນໃຫ້ຊ່ອງເປີດໜ້ອຍລົງເພື່ອໃຫ້ການກໍ່ສ້າງຝາມີຄວາມທົນທານ. ຫລີກຫລ່ຽງການວາງ ແລະ ຕິດຕັ້ງປ່ອງຢ້ຽມ ແລະ ປະຕູບານໃຫ່ຍໃນຝາຢູ່ເບື້ອງທີ່ ກົງກັບແຮງລົມ, ປ້ອງກັນປ່ອງຢ້ຽມ ແລະ ປະຕູທີ່ເຮັດດ້ວຍບານເກັດໂດຍການຝັງເດືອຍຍຶດໃສ່ ວົງກົບປະຕູ ແລະ ວົງກົບປ່ອງຢ້ຽມເຂົ້າໄປໃນຝາອາຄານ. ເຮັດໃຫ້ມີປ່ອງເປີດຢູ່ຝັ່ງກົງກັນຂ້າມກັບທິດທີ່ມີລົມແຮງ.
10) ການວາງທິດທາງຂອງອາຄານແມ່ນມີຄວາມສຳຄັນຫລາຍ, ເພື່ອເຮັດໃຫ້ຄວາມເສຍຫາຍໜ້ອຍລົງຍ້ອນໄພພິບັດ, ໃຫ້ວາງດ້ານຂ້າງທີ່ແຄບທີ່ສຸດ ຂອງອາຄານ ກົງ ກັບທິດທີ່ລົມແຮງ ແລະ ນ້ຳໄຫລຫລາກເຊິ່ງກະທົບຕໍ່ອາຄານ.

ຫລັກເກນ ທີ່ສຳຄັນ ຂອງສິ່ງປຸກສ້າງທີ່ ສາມາດຕ້ານກັບແຜ່ນດິນໄຫວ

1) ຕ້ອງແຍກອາຄານຮຽນ ຫ່າງກັນຢ່າງໜ້ອຍສຸດ 3 ແມັດ ເພື່ອຫລີກຫລ່ຽງການຊຸດຕົວຂອງຕົວອາຄານທັບໃສ່ກັນ, ຄືກັນກັບປາກົດການກະທົບແບບ “ໂດມີໂນ”
2) ເສີມສ້າງ ຄວາມແຂງແຮງບໍລິເວນມຸມ ແລະ ຂໍ້ຕໍ່ຕ່າງໆດ້ວຍການເສີມເສົາຄ້ຳໃນພາກສ່ວນທີ່ຮູ້ສຶກວ່າໂຄງສ້າງນັ້ນບໍ່ແຂງແຮງໃນກໍລະນີ ເກີດແຜ່ນດິນໄຫວ, ເຊັ່ນ “dragon ties”.
3) ຕ້ອງຮັບປະກັນການຍຶດແໜ້ນຂອງໂຄງສ້າງ ຄື: ການຝັງເດືອຍຢູ່ຄານກັບພື້ນ, ເສົາ, ຄານຍຶດຫົວເສົາ ແລະ ໂຄງສ້າງຫລັງຄາ.
4) ຕ້ອງເຮັດໃຫ້ ປະຕູ ປ່ອງຢ້ຽມ ມີ ຄວາມແຂງແກ່ນ.
5) ການອອກແບບສິ້ນສ່ວນໂຄງສ້າງຈະຕ້ອງໄດ້ສັດສ່ວນ, ສົມດຸນ ຖືກຕ້ອງ ແລະກະຈາຍສະໝ່ຳສະເໝີ ໄປຕາມແຜນຜັງຂອງອາຄານ.
6) ການອອກແບບອາຄານໂດຍປົກກະຕິແລ້ວຈະຕ້ອງໃຫ້ໄດ້ແນວດິ່ງເພື່ອໃຫ້ໄດ້ຄວາມແຂງແຮງ ແລະ ຄວາມສົມດຸນຂອງການແຈກຢາຍນ້ຳໜັກຢ່າງທົ່ວເຖິງ.
7) ການອອກແບບ ແລະ ການກໍ່ສ້າງຈະຕ້ອງທົນຕໍ່ການກະທົບທຸກທິດທາງ ເປັນຕົ້ນແມ່ນດ້ານຂ້າງຂອງອາຄານ ຕົວຢ່າງ: ການຄ້ຳທະແຍງ ເພື່ອຮັບການເສື່ອນໄປດ້ານຂ້າງ Brace face-loaded walls, ຍຶດຝາທຸກຝາດ້ວຍເສົາເອັນ ຫລື ຄານທັບ.
8) ຫລຸດຜ່ອນຮູເປີດໃນການກໍ່ສ້າງຝາທີ່ຮັບນ້ຳໜັກ.
9) ການອອກແບບສິ້ນສ່ວນທັງໜົດແມ່ນຈະຕ້ອງ ຖ່າຍທອດນ້ຳໜັກທັງໝົດໂດຍກົງລົງຫາດິນ.

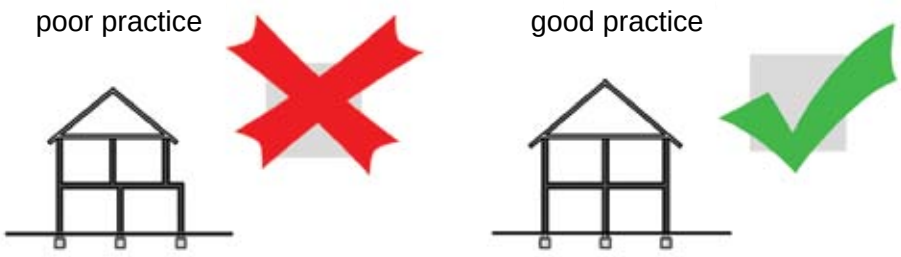


Figure 4. Vertical framing must continue to the foundation, otherwise is a critical weak spot

ຕ່ໍໄຟອັນຕະລາຍ ດ້ານອັກຄີໄພ ເພີ່ນແນະນຳໃຫ້ສ້າງ ແຕ່ລະອາຄານແຍກກັນແທນການສ້າງອາຄານທີ່ກ້ວາງຕິດຕໍ່ກັນ ເພື່ອປ້ອງການ ລຸກລາມຂອງໄຟໃນເວລາເກີດໄຟໄໝ້.

2.3.2 ວັດສະດຸ

ການກໍ່ສ້າງໂຮງຮຽນ ດ້ວຍວັດສະດຸ ທີ່ບໍ່ມີຄຸນນະພາບພຽງພໍ, ຄຸນນະພາບຂອງຄອນກີດຕ່ຳ, ຄວາມແຂງຂອງເຫລັກບໍ່ພຽງພໍ ຫລື ມີການນຳເອົາໄມ້ດິບມາເຮັດໂຄງສ້າງແມ່ນມັກຖືກເຮັດໃຫ້ເສຍຫາຍຢ່າງຮ້າຍແຮງ ເລື້ອຍໆຈາກໄພທຳມະຊາດນ້ຳຖ້ວມ ຫລື ລົມແຮງ. ຜູ້ຄຸມວຽກງານການກໍ່ສ້າງຄວນເອົາໃຈໃສ່ໃນການໃຊ້ວັດສະດຸທີ່ມີຄຸນນະພາບສູງ. ໃຫ້ແນ່ໃຈ ວ່າວັດສະດຸ ທີ່ຖືກສັ່ງມາແມ່ນວັດສະດຸທີ່ມີຄຸນນະພາບດີ ແລະ ຜ່ານການກວດສອບເປັນປະຈຳ ຕົວຢ່າງ: ດິນຊາຍ, ຫີນ, ກໍ່ຕີ ນ້ຳ ແລະ ຊີມັງທີ່ໃຊ້. ເພື່ອຮັກສາ ສຸຂະພາບຂອງເດັກ ຄວນປະຕິບັດດັ່ງນີ້:

- ຫ້າມໃຊ້ວັດສະດຸ ທີ່ເປັນພິດ toxic.
- ຫ້າມໃຊ້ວັດສະດຸ ທີ່ບັນຈຸ chlorofluorocarbone (CFC) ຕົວຢ່າງ: ຢູ່ໃນຕູ້ເຢັນ ຫລື ແອ.
- ຫ້າມໃຊ້ໄຍຫີນ asbestos.
- ຖ້າເປັນໄປໄດ້ກໍ່ຄວນໃຊ້ວັດສະດຸກໍ່ສ້າງຈາກທ້ອງຖິ່ນເພື່ອຫລຸດຜ່ອນຄ່າໃຊ້ຈ່າຍ ແລະເຮັດໃຫ້ການກໍ່ສ້າງສະດວກຂຶ້ນ.

ບັນດາວັດສະດຸທີ່ເອົາມານຳໃຊ້ ໃນການກໍ່ສ້າງ ອາຄານຮຽນຈະຕ້ອງຖືກຕ້ອງກັບ ມາດຕະຖານ ເຕັກນິກ ດ້ານວິຊາການຢູ່ໃນ ສປປ ລາວ (ix). ໃນ ສປປ ລາວແມ່ນໄດ້ນຳໃຊ້ມາດຕະຖານສາກົນ ດັ່ງລຸ່ມນີ້:
ASTM: American Society for Testing and Materials
*(*http://www.astm.org/DIGITAL_LIBRARY/index.shtml*)*
TIS: Thai Industrial Standard

ຖ້າວັດສະດຸທີ່ນຳໃຊ້ບໍ່ມີຢູ່ໃນລາຍການນີ້ ແມ່ນຈະຕ້ອງ ປະຕິບັດຕາມເກນກຳນົດ ວັດສະດຸ ຂອງຜູ້ຜະລິດ.

ຂໍ້ກຳນົດສະເພາະ ທາງສິ່ງແວດລ້ອມ

ຖ້າ ກໍ່ສ້າງໂດຍຜູ້ຮັບເໝົາເອກກະຊົນ, ໄມ້ເນື້ອແຂງຕ້ອງມາຈາກຜູ້ສະໜອງທີ່ມີໃບຢັ້ງຢືນຊຶ່ງໝາຍຄວາມວ່າເປັນໄມ້ ຖືກກົດໝາຍ.
ໃຊ້ ຢາຮັກສາເນື້ອໄມ້ ທີ່ມາຈາກນ້ຳ (water-borne preservatives), ຖ້າໃຊ້ຢານ້ຳມັນ (oil borne preservatives), ຄວນຫລີກໜ່ຽງ ຜະລິດຕະພັນ ທີ່ບັນຈຸສານ pentachlorophenol ທີ່ມີຄວາມເປັນພິດສູງ.
ໃຫ້ ສິດທິພິເສດໃນການເລືອກນຳໃຊ້ ວັດສະດຸ ທ້ອງຖິ່ນທີ່ຂຸດຄົ້ນ ແລະ ຜະລິດພາຍໃນ ,
ເພື່ອກຳຈັດມົນລະພາວະທາງອາກາດທີ່ເກີດຂຶ້ນ ເນື່ອງຈາກການເຜົາໄໝ້ນ້ຳມັນເພື່ອການຂົນສົ່ງ.
ຫລີກຫລ່ຽງການນຳໃຊ້ ຜະລິດຕະພັນທີ່ເຮັດໃຫ້ນ້ຳ, ອາກາດ ຫລື ຊັບພະຍາກອນທຳມະຊາດ ອື່ນໆສົກກະປົກ, ໃນເວລາ ຂຸດຄົ້ນ, ຜະລິດ, ນຳໃຊ້ ຫລື ເປັນສິ່ງເສດເຫລືອ(x).
ສະເໜີໃຫ້ນຳໃຊ້ວັດສະດຸທີ່ມີສີໄສ ສຳລັບ ຝາ ແລະ ຫລັງຄາເພື່ອການສະທ້ອນແສງ ແທນທີ່ຈະດູດເກັບພະລັງງານ ແສງແດດ.
ນຳໃຊ້ວັດສະດຸໃຫ້ມີປະສິດທິພາບ. ຫລີກຫລ່ຽງການເສຍຖິ້ມຂອງວັດສະດຸກໍ່ສ້າງ. ພະຍາຍາມນຳໃຊ້ຄືນ ວັດສະດຸຈາກການ ມ້າງອາຄານ ໃນເມື່ອເຫັນວ່າ ມັນຍັງ ຢູ່ໃນສະພາບດີ.

2.3.3 ວິທະຍາການກໍ່ສ້າງ

ການດຳເນີນການກໍ່ສ້າງແບບຍືນຍົງແມ່ນມີປະສິດທິພາບທາງດ້ານມູນຄ່າ,ທາງດ້ານນຳໃຊ້ ແລະ ສິ່ງແວດລ້ອມທີ່ເໝາະສົມ; ເມື່ອເຮົາເລືອກລະບົບການກໍ່ສ້າງທີ່ເໝາະສົມແລ້ວ,ນັກກໍ່ສ້າງຄວນເລືອກຢ່າງນຶ່ງທີ່ແທດເໝາະກັບສະພາບທ້ອງຖິ່ນເຊັ່ນ: ການປະຍຸກໃຊ້ວັດສະດຸທີ່ມີຢູ່ແລ້ວແລະ ແຮງງານທີ່ມີຄວາມຊຳນານງານ. ອີງຕາມສະພາບຕົວຈິງຂອງທ້ອງຖິ່ນ ຜູ້ອອກແບບໂຮງຮຽນ ສາມາດ ເລືອກລະບົບອາຄານທີ່ຍືນຍົງໄດ້ດັ່ງລຸ່ມນີ້:

ຮາກຖານ:

ຄຸນນະພາບ ແລະ ອາຍຸການໃຊ້ງານ ຂອງອາຄານຂຶ້ນຢູ່ກັບ ແບບຂອງຮາກຖານຂອງອາຄານທີ່ສ້າງຂຶ້ນ; ຮາກຖານທີ່ບໍ່ຖືກຕ້ອງ ສາມາດກໍ່ໃຫ້ເກີດຄວາມເສຍຫາຍ ແລະ ການເສື່ອມໂຊມໂດຍໄວ ແລະ ເປັນການຍາກທີ່ຈະປົວແປງໄດ້. ປະເພດຮາກຖານຄວນຖືກຄັດເລືອກກ່ອນໃນໄລຍະການວາງແຜນເພາະມັນມີຜົນ

ສະທ້ອນຕໍ່ການອອກແບບຂອງ ອາຄານທັງໝົດ. ເງື່ອນໄຂໃນເວລາພິຈາລະນາເລືອກແບບຮາກຖານ ລວມມີ: ຄຸນນະພາບຂອງດິນ ທີ່ສາມາດກຳນົດໄດ້ໂດຍຜ່ານການສຳຫລວດ ແລະ ວິໄຈດິນ; ການຮູ້ກ່ອນລ່ວງໜ້າ ນ້ຳໜັກທີ່ຢູ່ໃນຕົວອາຄານ ຊຶ່ງແມ່ນ: ນ້ຳໜັກຕົວມັນເອງໃນເວລາຕິດຕັ້ງທັງໝົດ (ນ້ຳໜັກຄົງທີ່ +ຈອນ) ແລະ ອຸປະກອນທີ່ມີ ແລະ ແຮງງານທີ່ມີຄວາມຊຳນານງານ.

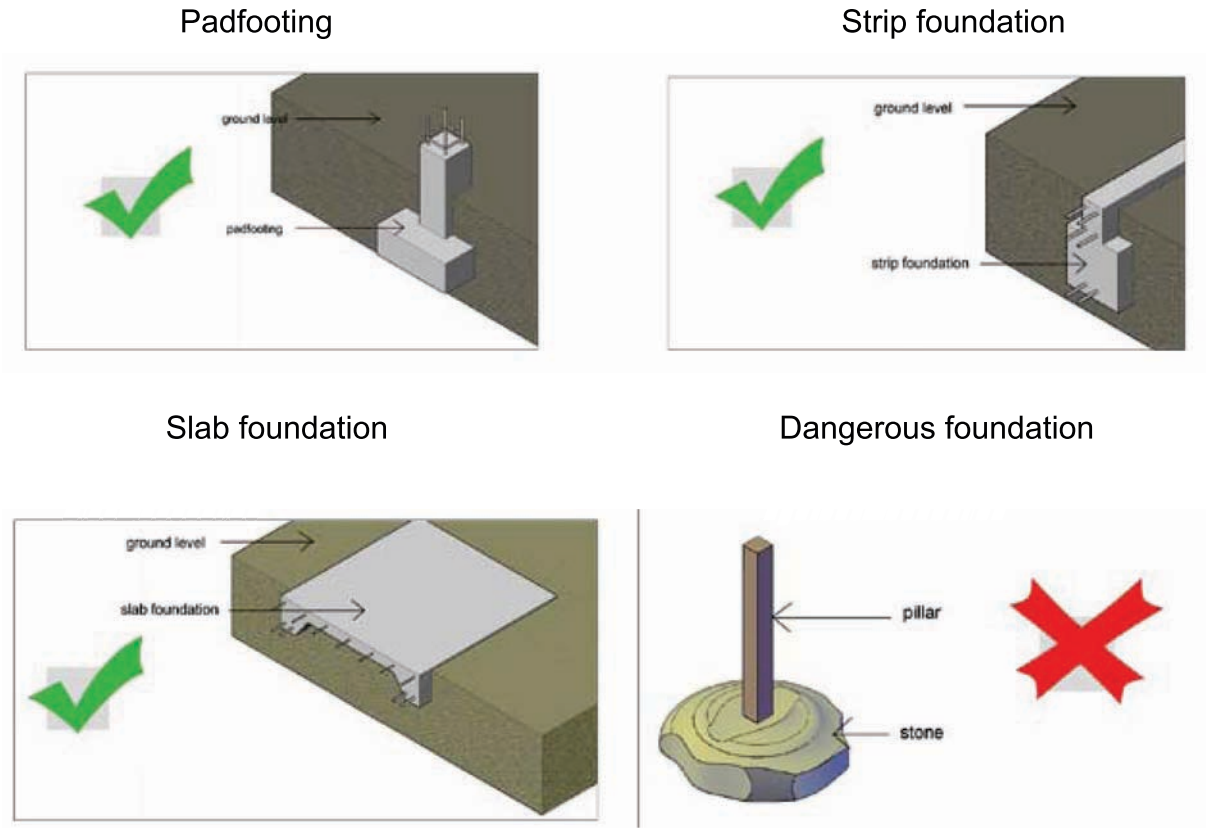


Figure 5. Good and Bad foundations

ລະບຽບການ ໃນການອອກແບບຮາກຖານ ທີ່ປອດໄພຈາກໄພນ້ຳຖ້ວມ ແລະ ແຜ່ນດິນໄຫວ:

- ກວດກາປະເພດດິນ ແລະ ລະດັບນ້ຳຖ້ວມ. ປະເມີນຄວາມແຂງແກ່ນຂອງດິນ ເພື່ອອອກແບບຮາກຖານທີ່ ຮັບການສັ່ນສະເທືອນ ຈາກແຜ່ນດິນໄຫວ (ເບິ່ງ ມາດຕະຖານຂອງວິສະວະກຳໄຫ ທີ່ໃຊ້ໂດຍກະຊວງ ໂຍທາທິການ)
- ຫລີກຫລ່ຽງການສ້າງຮາກຖານດຽວໂດຍບໍ່ມີຄານດິນ.
- ເຮັດຮາກຖານເບຕົ້ງເສີມເຫລັກເພື່ອຮອງຮັບຝາທີ່ເປັນຝາຮອງຮັບນ້ຳໜັກ.
- ດິນດາກອ່ອນ ແລະ ດິນຊາຍບໍ່ແໜ້ນໄປຈົນເຖິງດິນຊາຍແໜ້ນປານກາງ ທີ່ອົມນ້ຳສາມາດຊຶມຜ່ານໄດ້, ສາມາດປ່ຽນສະພາບເປັນດິນແຫລວໄດ້ເວລາເກີດແຜ່ນດິນໄຫວ, ຫລີກຫລ່ຽງການກໍ່ສ້າງ ຢູ່ໃນເຂດດັ່ງກ່າວ ຫລື ຕ້ອງປຶກສານຳຊ່ຽວຊານກ່ຽວກັບເສົາເຂັມ ຫລື ຮາກຖານແຜ່ ແລະ ການອອກແບບໂຄງສ້າງ ອາຄານ.

ໂຄງສ້າງທີ່ຮັບນ້ຳໜັກ

ໂຄງສ້າງທີ່ຮັບນ້ຳໜັກ (ໂຄງ) ຂອງຕົວອາຄານແມ່ນມັກຂຶ້ນຢູ່ກັບວິທີປະຕິບັດແລະຄວາມນິຍົມຂອງທ້ອງຖິ່ນນັ້ນໆ. ເວລາທີ່ມີຂໍ້ຈຳກັດໃນການຊອກຫາວັດສະດຸກໍ່ສ້າງ ທາງເລືອກງ່ຽວກັບລະບົບໂຄງສ້າງຕ້ອງໄດ້ນຳມາພິຈາລະນາ. ສຳລັບປະເພດໂຄງສ້າງ ຢ່າງໜ້ອຍ ແມ່ນມີ 3 ລະບົບທີ່ເປັນພື້ນຖານ:

ໂຄງສ້າງເບຕົ້ງເສີມເຫລັກ:

ໂຄງສ້າງ ເບຕົ້ງເສີມເຫລັກແມ່ນໄດ້ຖືກນຳໃຊ້ທົ່ວໄປຢູ່ໃນ ວຽກງານປຸກສ້າງໂຮງຮຽນ: ເສົາ ແລະ ຄານ ໄດ້ເທພ້ອມກັນເພື່ອປະກອບເປັນໂຄງສ້າງ. ຊ່ອງວ່າງ (ການອັດຮອຍຕໍ່/ຊ່ອງວ່າງ) ບໍ່ໄດ້ຮັບໜ້ຳໜັກ ແລະ ຖືກອັດດ້ວຍໄມ້, ດິນຈີ່ ຫລື ໄມ້ໄຜ່. ເພື່ອໃຫ້ມີຄວາມທົນທານຕໍ່ກັບແຜ່ນດິນໄຫວ ແລະ ໄພອັນຕະລາຍທາງທຳມະຊາດ, ການຍຶດແໜ້ນຢ່າງແຂງແຮງແມ່ນມີຄວາມຈຳເປັນ ລະຫ່ວາງ ຂອງເສົາເບຕົ້ງເສີມເຫລັກທາງຕັ້ງ ກັບ ຄານດິນ ແລະ ຄານຫົວເສົາ. (ຄານແບບວົງແຫວນຍຶດຫົວເສົາ ແມ່ນຄານຕາມທາງນອນ ທີ່ໄປຕາມຮູບຮ່າງຂອງອາຄານທີ່ມີ ຮູບວົງມົນ. ຫລັງຄາ ແມ່ນຍຶດໂດຍກົງກັບຄານດັ່ງກ່າວ) ສິ່ງສຳຄັນເພື່ອປ້ອງກັນແຜ່ນດິນໄຫວ ແມ່ນການຍຶດທີ່ແຂງແກ່ນ ລະຫວ່າງໂຄງສ້າງຮັບນ້ຳໜັກ ແລະ ສິ້ນສ່ວນປະກອບອັດຊ່ອງຫວ່າງທີ່ບໍ່ໄດ້ຮັບນ້ຳໜັກ. ຝາທີ່ບໍ່ໄດ້ຮັບການຍຶດແໜ້ນໃຫ້ດີ ອາດຈະຊຸເພພັງລົງໄດ້.

ໂຄງສ້າງໄມ້:

ໂຄງສ້າງໄມ້ມີຄວາມຕ້ານທານໄດ້ດີຕໍ່ກັບແຜ່ນດິນໄຫວ ແລະ ໄພອັນຕະລາຍທາງທຳມະຊາດອື່ນໆກວ່າໂຄງສ້າງເບຕົ້ງເສີມເຫລັກ ແລະ ງ່າຍໃນການກໍ່ສ້າງ. ແຕ່ກໍ່ຕ້ອງການຊ່າງໄມ້ທີ່ຊຳນານ ສຳລັບວຽກນີ້. ໃນສະຖານະການທີ່ໄມ້ແມ່ນຫາຍາກ ຫລື ຈາກການຫ້າມຕັດ ແລະ ຂຸດຄົ້ນໄມ້, ສະເໜີ ແນະ ບໍ່ຄວນເລືອກໂຄງສ້າງໄມ້. ຫ້າມໃຊ້ໄມ້ທີ່ມີຮອຍແຕກແຫງ ຫລື ສະແດງໃຫ້ເຫັນວ່າມີປວກກິນ. ສິ່ງສຳຄັນແມ່ນຕ້ອງໃຊ້ບູລອງໃຫ້ພຽງພໍ. ບໍ່ຄວນນຳໃຊ້ບູລອງທີ່ເປັນຫມັ້ງ.

ໂຄງສ້າງເຫລັກ:

ເພິ່ນມັກໃຊ້ໂຄງສ້າງເຫລັກເວລາສຳລັບການກໍ່ສ້າງໂຮງຮຽນທີ່ມີຂະໜາດໃຫ່ຍ. ເຫຼັກແມ່ນວັດສະດຸປະເພດທີ່ແຂງແຮງຫລາຍ ແຕ່ຫຍຸ້ງຍາກໃນການປະກອບ ແລະ ຕິດຕັ້ງ ຖ້າຫາກຂາດເຄື່ອງມືສະເພາະ ແລະຜູ້ຊ່ຽວຊານ ທີ່ມີຄວາມຊຳນານງານ. ໂຄງສ້າງເຫລັກ ແມ່ນວັດສະດຸນຳເຂົ້າຈາກຕ່າງປະເທດແລະລາຄາກໍ່ຂ້ອນຂ້າງແພງ ດັ່ງນັ້ນ ເພິ່ນຈຶ່ງບໍ່ມັກໃຊ້ໃນວຽກປຸກສ້າງ ໂຮງຮຽນ.
ສິ່ງສຳຄັນແມ່ນຕ້ອງໃຊ້ບູລອງໃຫ້ພຽງພໍ. ບໍ່ຄວນນຳໃຊ້ບູລອງທີ່ເປັນຫມັ້ງ.

ພື້ນ:

ການເລືອກປະເພດແຜ່ນພື້ນ (ທັງເຕັກໂນໂລຊີທີ່ໃຊ້ ແລະ ດ້ານຫນ້າ) ຂຶ້ນກັບຈຸດປະສົງໃນການໃຊ້. ໃຫ້ເອົາໃຈໃສ່ບັນຫາ ການຮັບນ້ຳໜັກ, ການຊຳລຸດຊຸດໂຊມ, ຄວາມສະດວກໃນການອະນາໄມ, ຄວາມມັ່ນ ແລະ ຄວາມທົນທານຕໍ່ຄວາມຊຸ່ມແລະ ແມງໄມ້. ພື້ນຕິດດິນ ຄວນຢອງໃສ່ເທິງຊັ້ນດິນຊາຍຕ່ຳແໜ້ນໜາ 50 ຊມ.

ຝາ:

ເຕັກນິກການກໍ່ສ້າງຝາຂຶ້ນກັບຈຳນວນຊັ້ນ, ນ້ຳໜັກທີ່ຄາດຄະເນໄວ້ແລະ ຄວາມສ່ຽງຕໍ່ພາຍຸ ຫລື ແຜ່ນດິນໄຫວ. ການເລືອກປະເພດຝາຍັງ ຂຶ້ນກັບວັດສະດຸກໍ່ສ້າງ ທີ່ຈະໃຊ້ ແລະ ການມີຊ່າງທີ່ຊຳນານງານບໍ່?. ຝາຄວນ ຕ້ອງການ ການບຳລຸງຮັກສາໜ້ອຍທີ່ສຸດທີ່ເປັນໄປໄດ້. ຝາມີຄວາມສຳຄັນໃນການຕ້ານແຜ່ນດິນໄຫວຂອງ ອາຄານໂຮງຮຽນ. ແຜ່ນດິນໄຫວມີຜົນກະທົບຕໍ່ອາຄານໂດຍສະເພາະແມ່ນຈາກແຮງຕາມທາງນອນ. ອັນຕະລາຍຫຼັກທີ່ເກີດຈາກແຮງເຄື່ອນເໜັງຕາມທາງນອນ ຂອງແຜ່ນດິນແມ່ນມາຈາກການພັງທະລາຍ ຂອງຝາ ອາຄານ ແລະ ຜົນຕາມມາກໍ່ຄືຫລັງຄາກໍ່ ພັງທະລາຍລົງມາເຊັ່ນກັນ. ດັ່ງນັ້ນ, ຈຸດປະສົງຫຼັກຂອງການ ກໍ່ສ້າງອາຄານທີ່ຕ້ານທານກັບແຮງແຜ່ນດິນໄຫວແມ່ນຫລີກລ້ຽງບໍ່ໃຫ້ຝາພັງລົງມາ ແລະ ຮັບປະກັນໃຫ້ຫລັງຄາມີ ຄວາມໝັ້ນຄົງຄູ່ກັບຝາເຫຼົ່ານັ້ນ. ເພື່ອໃຫ້ອາຄານທົນທານຕໍ່ແຮງແຜ່ນດິນໄຫວ, ພາຍຸ ແລະ ນ້ຳຖ້ວມ ເທົ່າທີ່ເປັນ ໄປໄດ້ ຕ້ອງມີ ມາດຕະການ ດັ່ງຕໍ່ໄປນີ້:

- ຮັບປະກັນວ່າຝາມີການຍຶດຢ່າງໜຽວໜ້ຳ. ຕ້ອງມີວິສະວະກອນທີ່ມີຄວາມສາມາດເພື່ອຄິດໄລ່ໂຄງເສີມເຫຼັກ ປະກອບໃສ່ຝາໃຫ້ແຂງແຮງຕາມທີ່ຕ້ອງການ ແລະ ກວດກາຄຸນນະພາບເປັນປົກກະຕິໃນເວລາກໍ່ຝາ.
- ຮັບປະກັນວ່າຄານຫົວເສົາໄດ້ຍຶດດີ ກັບເສີມເຫລັກໃນຝາ ແລະ ເສົາ
- ຝາທີ່ເຮັດດ້ວຍຊີມັງ ແລະ ດິນຈີ່ມີຄວາມຕ້ານທານຕໍ່ນ້ຳຖ້ວມໄດ້ດີກວ່າຝາດິນ. ລວງກ້ວາງຂອງຝາ ລະຫວ່າງຊ່ອງເປີດຄວນມີຢ່າງໜ້ອຍ 1/3 ຂອງຄວາມສູງ ແລະ ບໍ່ຄວນຫລຸດ 1 ແມັດ.
- ຝາຕ້ອງຍຶດແໜ້ນຢ່າງດີກັບໂຄງສ້າງ. ຖ້າການກໍ່ສ້າງອາຄານດວ້ຍດິນຈີ່, ຄານທັບຝາ ແມ່ນຕ້ອງເຮັດ ເດື່ອຍຜັງອອກມາຈາກໂຄງສ້າງອາຄານເພື່ອ ຍຶດຝານັ້ນ.

ຫລັງຄາ:

ຄຸນນະພາບ ແລະ ສະພາບຂອງຫລັງຄາແມ່ນມີຄວາມສຳຄັນຫລາຍ. ຫລັງຄາປ້ອງກັນຕໍ່ກັບສະພາບອາກາດ, ລົມ, ຄວາມຮ້ອນ ແລະ ຄວາມເຢັນ. ຫລັງຄາຍັງປົກປ້ອງຝາດ້ານນອກຈາກແສງແດດ ແລະ ຝົນ. ໃຫ້ຫລີກ ຫລ່ຽງການເຮັດຫລັງຄາພຽງໃນເຂດທີ່ມີຝົນຕົກໜັກ, ນາຍຊ່າງທີ່ຊຳນານງານ, ຄຸນນະພາບຂອງວັດສະດຸກໍ່ສ້າງ, ແລະ ການບຳລຸງຮັກສາ ເປັນປະຈຳແມ່ນມີຄວາມຕ້ອງການເພື່ອເຮັດໃຫ້ຫລັງຄາພຽງບໍ່ໃຫ້ນ້ຳຊຶມເຂົ້າໄດ້.

ອີງຕາມສະພາບອາກາດຕົວຈິງ, ໃຫ້ພິຈາລະນາວ່າຄວນໃສ່ແຜ່ນກັນຄວາມຮ້ອນຫລັງຄາ ຫລື ຕິດຕັ້ງເພດານ ແບບທີ່ສາມາດລະບາຍອາກາດໄດ້ດີ. ການໃສ່ແຜ່ນກັນຄວາມຮ້ອນ ແມ່ນຫລຸດຜ່ອນຄວາມຮ້ອນທີ່ມາຈາກ ຫລັງຄາ, ຮັກສາອຸນຫະພູມ ພາຍໃນອາຄານໃຫ້ໜ້ອຍສຸດ. ການຍື່ນອອກຂອງສາຍຄາເຮັດໃຫ້ຝາ ແລະ ປ່ອງ ຢ້ຽມມີຮົ່ມແລະ ເປັນປະໂຫຍດໂດຍສະເພາະ ສຳລັບຈຳກັດການເຜົາໄໝ້ຂອງແສງຕາເວັນຕໍ່ຝາໃຫ້ນ້ອຍທີ່ສຸດ. ເພື່ອໃຫ້ມີຄວາມຕ້ານທານສູງຕໍ່ແຜ່ນດິນໄຫວ ແລະ ລົມແຮງ ຫລັງຄາຕ້ອງໄດ້ຍຶດໃສ່ກັບຝາ ແລະ ກັບເສົາ ທັງ ໝົດໃຫ້ດີ. ໃນເຂດມີມັກເກີດລົມພາຍຸ, ຄວາມຊັນຂອງຫລັງຄາປະມານ 30 ອົງສາ ສາມາດຫລຸດຜ່ອນແຮງເປີດ ຂອງລົມ. ການຍຶດແໜ້ນຢ່າງດີຂອງສິ້ນສ່ວນອົງປະກອບຂອງຫຼັງຄາ ກັບໂຄງສ້າງຫລັງຄາແມ່ນມີຄວາມຈຳເປັນ. ວັດສະດຸມຸງຫລັງຄາ ຫຼື ວັດສະດຸ ເພດານທີ່ມີ Asbestos ສານໄຍຫີນແກ້ວແມ່ນຫ້າມນຳມາໃຊ້ໃນການກໍ່ສ້າງ ໂຮງຮຽນ. ການຖືກສານ Asbestos ໄຍແກ້ວສາມາດເປັນພະຍາດປອດ ແລະ ເປັນມະເຮັງໄດ້, ຂຶ້ນກັບ ປະລິມານສະສົມຢູ່ໃນອາກາດ ແລະ ໄລຍະການຖືກສານດັ່ງກ່າວ.

ປ່ອງເປີດ ແລະ ປ່ອງຢ້ຽມ:

ປ່ອງເປີດແມ່ນອົງປະກອບທີ່ສຳຄັນເພື່ອຮັບແສງສະຫວ່າງທຳມະຊາດ ແລະ ການຄວບຄຸມອາກາດພາຍໃນ ອາຄານ. ເນື້ອທີ່ປ່ອງຄວນກ້ວາງ ແລະ ສາມາດເປີດອອກໄດ້ຢ່າງເຕັມສ່ວນ, ທີ່ມີຂະໜາດໃກ້ຄຽງກັນທັງ 2

ຂ້າງຂອງຫ້ອງເພື່ອໃຫ້ອາກາດລະບາຍຜ່ານໄດ້ຢ່າງດີ.ປ່ອງຢ້ຽມສຳລັບໂຮງຮຽນປະຖົມຄວນເປັນແບບຕາ
ໜ່າງ,ສຳລັບໂຮງຮຽນມັດທະຍົມເປັນບານເກັດປິດເປີດໄດ້. ບໍ່ຄວນໃຊ້ປ່ອງຢ້ຽມທີ່ເປັນບານແຜ່ນແກ້ວປິດຕາຍ.
ໃນເຂດບ່ອນທີ່ມີລົມແຮງ ແລະ ໜາວຄວນໃຊ້ແຜ່ນໃສ່ບັງລົມໄສ. ໂດຍທົ່ວໄປ ແລ້ວ ປະຕູຕ້ອງເປີດອອກຂ້າງ
ນອກເພື່ອໃຫ້ນັກຮຽນສາມາດອອກໄດ້ສະດວກຂຶ້ນຕື່ມໃນກໍລະນີເກີດແຜ່ນດິນໄຫວ ຫລື ໄຟໄໝ້.
ຂໍ້ສະເໜີແນະການ ກ່ຽວກັບ ການວາງປ່ອງຢ້ຽມ ມີດັ່ງລຸ່ມນີ້:

- ຈຳກັດບໍ່ໃຫ້ຕາກແດດ ແລະ ຝົນໂດຍກົງ.
- ຖ້າເປັນໄປໄດ້ ໃຫ້ໃຊ້ຕົ້ນໄມ້ ເພື່ອເພີ່ມຮົ່ມໃນເຂດຮ້ອນ ຫລື ປ້ອງກັນລົມໃນເຂດພູດອຍ.
- ຕິດຕັ້ງປ່ອງຢ້ຽມຕາມແລວລົມ ແລະ ເພື່ອອາກາດມີການໝູນວຽນ ແລະ ລະບາຍໄດ້ດີ.

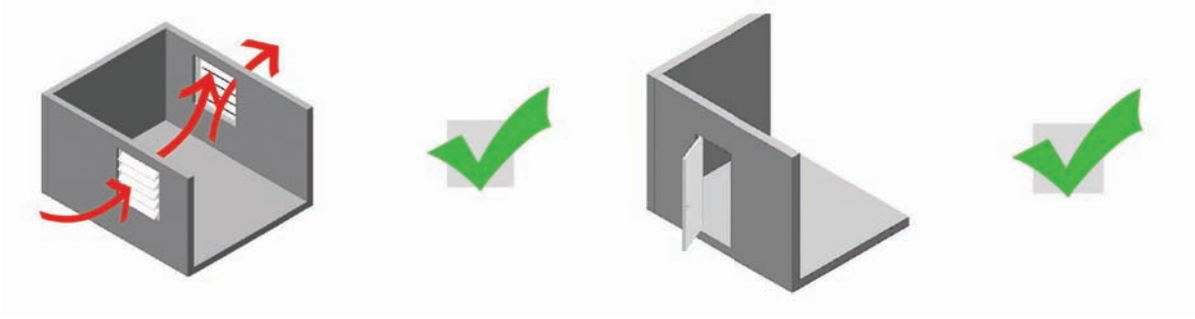


Figure 7. Good window

Figure 6. Door must open to the outside

ຮູບທີ 7. ທີ່ຕັ້ງຂອງປ່ອງຢ້ຽມທີ່ ຖືກຕ້ອງ

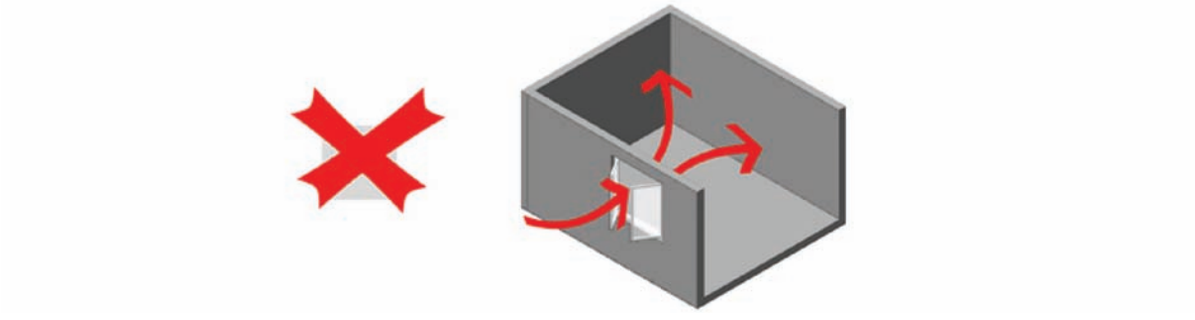


Figure 8. Wrong window location. Not allowing for cross ventilation

ຮູບທີ 8. ທີ່ຕັ້ງຂອງປ່ອງຢ້ຽມບໍ່ຖືກຕ້ອງ. ການລະບາຍອາກາດອອກບໍ່ໄດ້

2.3.4 ມາດຕະການ ຄວາມປອດໄພຂອງອາຄານ ທີ່ມີໃນປະຈຸບັນ .

ສຳລັບອາຄານຮຽນທີ່ມີໃນປະຈຸບັນ ການກວດກາຄວາມປອດໄພຂອງອາຄານຕ້ອງໄດ້ເຮັດທຸກໆ 5 ປີໂດຍ
ພະແນກ ສຶກສາທິການແຂວງ. ອາຄານເຫຼົ່ານີ້ຕ້ອງໄດ້ບັນລຸເງື່ອນໄຂ ຕ່ຳສຸດດັ່ງລຸ່ມນີ້:

- ວັດສະດຸມຸງຫລັງຄາ ຍຶດແໜ້ນຢ່າງຖືກຕ້ອງໃສ່ກັບໄມ້ຂ້າວ.
- ການມຸງຫລັງຄາຕ້ອງປະກອບໃຫ້ຖືກຕ້ອງເພື່ອປ້ອງກັນການຮົ່ວຊຶມ.

- ວຽກໄມ້ທຸກໆພາກສ່ວນ, ລວມທັງໂຄງຫລັງຄາ,ໂຄງສ້າງເອກ ແລະສຳຮອງ (ຊິ້ນສ່ວນປະກອບ)ແມ່ນ ໃຫ້ອົບ/ສີດໃຫ້ດີເພື່ອປ້ອງກັນການຜຸພັງ ແລະທຳລາຍຈາກມອດ, ປອກ ຫຼືແມງໄມ້ອື່ນໆ.
- ໄມ້ທີ່ໃຊ້ເຂົ້າໃນການກໍ່ສ້າງທັງໝົດໄດ້ຖືກອົບແຫ້ງແລ້ວ, ບໍ່ມີຮອຍແຕກແຫງ ແລະ ບິດງໍ.
- ໂຄງສ້າງເພື່ອຮັບເພດານແມ່ນໄດ້ ຍຶດຈັບໃຫ້ປອດໄພໃສ່ກັບຄານຫລັງຄາ.
- ເສົາທຸກໆເສົາແມ່ນປອດໄພ, ບໍ່ແຕກພຸພັງ, ກົ່ງ ຫລື ເສຍສູນ.
- ຝາຍຶດແໜ້ນກັບເສົາ ແລະ ບໍ່ມີຄວາມສ່ຽງທີ່ຈະພັງລົງ.
- ປິດແລະຖົມຂຸມ ແລະນ້ຳສ້າງ ທີ່ເຊົາໃຊ້.
- ຮົ້ວແມ່ນເຮັດໃຫ້ແລ້ວສົມບູນ ແລະ ໃຫ້ເປັນອານາເຂດຂອງໂຮງຮຽນຢ່າງຈະແຈ້ງ.
- ນ້ຳຂີ້ຕົມແລະນ້ຳເປື້ອນໄດ້ມີການລະບາຍຖິ້ມຢ່າງຖືກຕ້ອງ.
- ມີລະບົບລະບາຍນ້ຳຝົນທີ່ດີ

ໂຮງຮຽນທີ່ມີຢູ່ແລ້ວອາດຈະຕ້ອງໄດ້ຮັບການສ້ອມແປງ ແລະ ບູລະນະຄືນໃໝ່ ເພື່ອ ໃຫ້ໄດ້ຕາມມາດຕະຖານ ຄວາມປອດໄພຕ່ຳສຸດ. ຖ້າອາຄານມີການເປ່ເພຍ່ຳໆຮ້າຍແຮງຍ້ອນ ນ້ຳຖ້ວມ ຫລື ໄພອັນຕະລາຍຈາກທຳມະຊາດອື່ນໆ, ຕ້ອງໄດ້ ມີການປະເມີນ ທາງວິສະວະກຳສະເພາະ.
(ເບິ່ງ ພາກຜະໜວກ 1 ບັນຊີ ລາຍການວຽກ ທີ່ ຕ້ອງກວດກາ)
(ເບິ່ງ ວຽກ ສ້ອມແປງ ກ່ຽວ ກັບໂຮງຮຽນ ປະຖົມ. ພະແນກຄຸ້ມຄອງ ອອກແບບ ກໍ່ສ້າງ-ສ້ອມແປງ)

2.3.5 ການຮັບປະກັນ ຄຸນນະພາບຂອງການກໍ່ສ້າງ.

- ກວດສອບປະສົບການແລະຜົນງານຂອງຊ່າງຊຳນານງານ ແລະ ວິສະວະກອນຂອງບໍລິສັດຮັບເໝົາ ກໍ່ສ້າງ.
- ກວດກາຄຸນນະພາບຂອງວັດສະດຸ ກໍ່ສ້າງ (ກຳນົດ ໃນພາກ 2.3.2)
- ຮັບປະກັນ ການເກັບມ້ຽນ ວັດສະດຸກໍ່ສ້າງໃຫ້ຖືກຕ້ອງຕາມ ວິທີ ຕົວຢ່າງ:
    - ຊີມັງ ຄວນເກັບມ້ຽນໃນສາງທີ່ແຫ້ງ,ບໍ່ຖືກແສງແດດ ແລະ ວາງຢອງໄວ້ເທິງຖ້ານແປ້ນເພື່ອ ປ້ອງກັນບໍ່ໃຫ້ຕິດພື້ນດິນ
    - ໄມ້ແປ້ນບໍ່ວາງໃສ່ບ່ອນຊຸ່ມ ຫລື ແສງຕາເວັນ.
    - ກະເບື້ອງ ຫລັງຄາ ແລະແຜ່ນສັງກະສີ ຕ້ອງວາງຊ້ອນກັນຕາມທາງຍາວບໍ່ໃຫ້ວັດສະດຸອື່ນທັບ ເຕັ້ງ ແລະ ບໍ່ໃຫ້ຍ່ຳ ຢຽບ.
    - ຫີນ ແລະ ຊາຍ ຕ້ອງກອງແຍກເປັນກອງໄວ້ຕ່າງຫາກ ຕາມເນື້ອທີ່ທີ່ສະອາດປາສະຈາກ ໃບໄມ້, ຮາກໄມ້,ດິນ ຫລື ເສດນ້ຳມັນ.
    - ບໍ່ໃຫ້ເກັບມ້ຽນ ເຄື່ອງເຟີນີເຈີໄວ້ ໃນອາຄານທີ່ກຳລັງກໍ່ສ້າງ. ຕ້ອງປະສານງານເລື່ອງເວລາຈັດ ສົ່ງເພື່ອຫລີກຫຼ່ຽງບັນຫານີ້.

(ເບິ່ງເອກະສານ ພາກຜະນວກ 2. ຄູ່ມື ໃນການຄວບຄຸມ ກວດການສະຫນາມ ກໍ່ສ້າງ)

ພາກ 3.

ການອອກແບບທາງດ້ານສະຖາປັດຕະຍະກຳ ແລະ ມາດຕະຖານການວາງແຜນ

3.1 ການອອກແບບທາງດ້ານສະຖາປັດຕະຍະກຳ

ສິ່ງສຳຄັນຫຼັກ ຂອງ ການອອກແບບ ທາງດ້ານສະຖາປັດຕະຍະກຳ ຂອງໂຮງຮຽນທີ່ດີ ແມ່ນເລື່ອງ ການຮຽນຮ່ວມ (inclusiveness) ແລະໂຮງຮຽນທີ່ເປັນເພື່ອນໃຫ້ແກ່ເດັກນ້ອຍ (children-friendliness).ຢູ່ ເຂດຫ່າງໄກສອກຫຼີກ ສ່ວນຫລາຍໂຮງຮຽນເປັນພຽງ ອາຄານຖາວອນຫຼັງນຶ່ງຂອງຊຸມຊົນນັ້ນໆ. ດ້ວຍເຫດຜົນນີ້ ມັນຮຽກຮ້ອງໃຫ້ ມີການປັບປ່ຽນໃນການອອກແບບ. ການອອກແບບໂດຍພື້ນຖານແລ້ວຕ້ອງສາມາດ ປັບ ປ່ຽນເພື່ອ ຮັບເອົາຮູບແບບອື່ນໆໄດ້. ໂຮງຮຽນໃນຊົນນະບົດ ສ່ວນຫລາຍໃຊ້ເປັນໂຮງຮຽນຫ້ອງຄວບ ແລະ ຖືກນຳໃຊ້ຢ່າງເຕັມສ່ວນໃນໄລຍະໂມງເຂົ້າຮຽນ . ນອກນັ້ນ ເພື່ອຍົກສູງຄວາມສຳຄັນຂອງໂຮງຮຽນຕໍ່ ສັງຄົມ ທົ່ວໄປ ກໍ່ຄືເພື່ອໃຫ້ກຸ້ມຄ່າດ້ານເສດຖະກິດ ອາຄານໂຮງຮຽນຍັງສາມາດ ນຳໃຊ້ໄດ້ ແບບອະເນກປະສົງ ເຊັ່ນ:
ແຕ່ລະມື້: ການສຶກສາຜູ້ໃຫ່ຍ (ໂຮງຮຽນພາກຄ່ຳ)
ເປັນໄລຍະ: ວຸງກງານການເຄື່ອນໄຫວດ້ານສັງຄົມ, ການປະຊຸມຂອງຊາວບ້ານ.
ເປັນບາງໂອກາດ:ເປັນບ່ອນຫລົບພາຍຸ, ບ່ອນບັດເລືອກຕັ້ງ, ລະດົມການສັກຢາປ້ອງກັນພະຍາດ ແລະ ອື່ນໆ.

ຄວາມປອດໄພຂອງເດັກນ້ອຍແມ່ນສິ່ງທີ່ສຳຄັນທີ່ສຸດ ແລະ ຕ້ອງໄດ້ພິຈາລະນາໃນແຕ່ລະຂັ້ນຕອນຂອງ ການອອກແບບໂຮງຮຽນ.
ຕຶກອາຄານໂຮງຮຽນ ຄວນຈະເປັນສະຖານທີ່ ສາມາດເຂົ້າເຖິງໄດ້ຂອງນັກຮຽນ, ລວມເຖິງນັກຮຽນພິການທີ່ໃຊ້ ລົດລໍ້, ໄມ້ຄ້ຳແລະ/ຫລື ເຄື່ອງຊ່ວຍຄົນພິການທຸກໆປະເພດ.

ຮູບຊົງຂອງໂຮງຮຽນ ແມ່ນສຳຄັນເພື່ອຮັບປະກັນການປຸກສ້າງທີ່ໝັ້ນຄົງຖາວອນ. ບາງຮູບຊົງຂອງອາ ຄານສາມາດ ຫລຸດຜ່ອນ ຫລື ຕ້ານທານໄດ້ດີກັບຜົນກະທົບຈາກແຜ່ນດິນໄຫວ, ນ້ຳຖ້ວມ,ພາຍຸໄຕ້ຝຸ່ນ, ຄື້ນນ້ຳສູງຍ້ອນພາຍຸພັດ ແລະ ສະພາບອາກາດ.

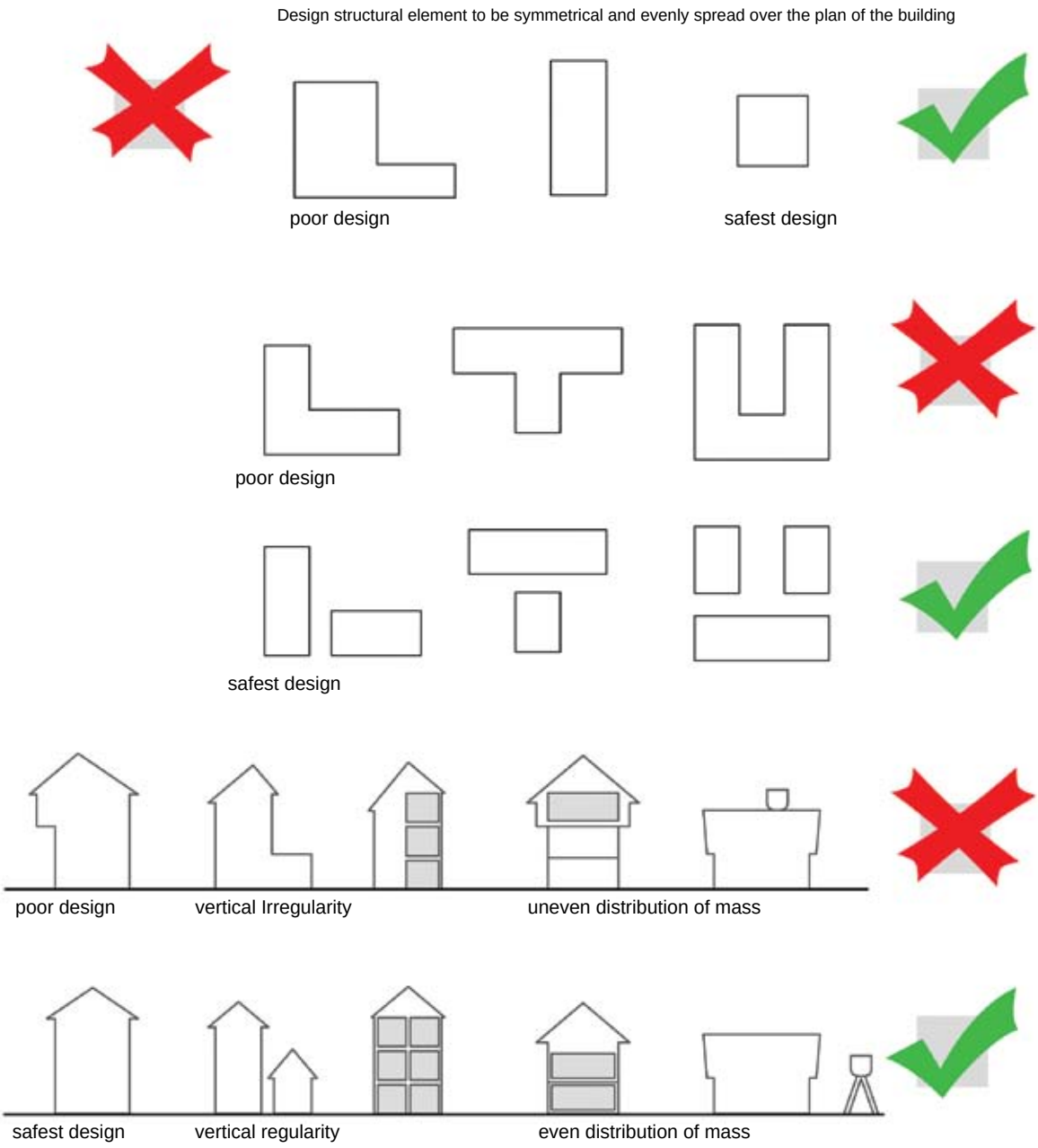


Figure 9. Symmetrical structural elements

3.1.1 ສ່ວນປະກອບຂອງໂຮງຮຽນ ແລະ ຂະໜາດຂອງຫ້ອງຮຽນ (xi)

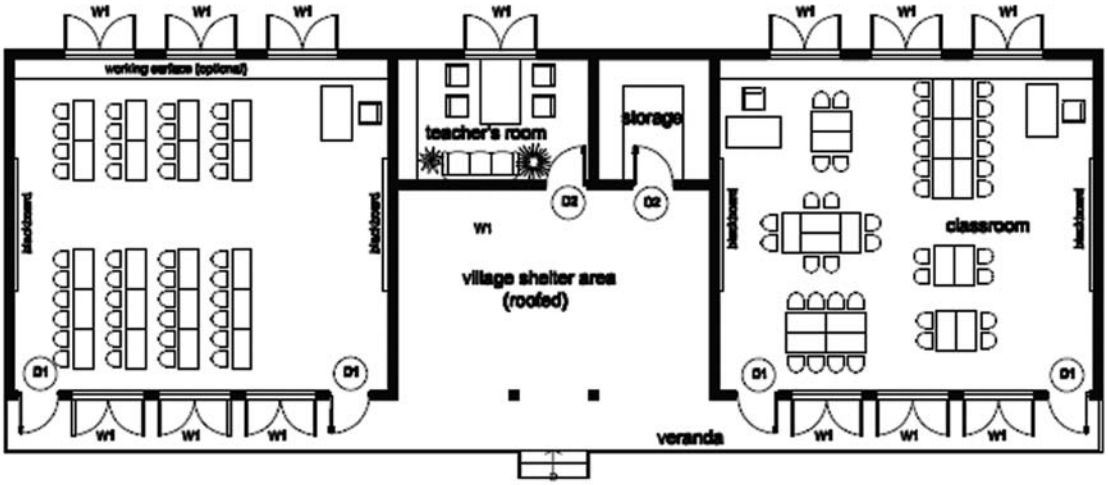
ສ່ວນ ປະກອບຂອງ ໂຮງຮຽນ	ເນື້ອທີ່ ທີ່ ຕ້ອງການ
ສິ່ງອຳນວຍຄວາມສະດວກພາຍໃນ	
ຫ້ອງຮຽນ	ພື້ນທີ່ ຕ້ອງການຕ່ຳສຸດແມ່ນ 1.60 ມ^2 / ນັກຮຽນຄົນໜຶ່ງ(xii). ລວມເອົາ 10% ເນື້ອທີ່ ເພື່ອໄວ້ ເພື່ອການຂະຫຍາຍຕົວຂອງປະຊາກອນ. ຄື: ((ຈຳນວນນັກຮຽນ ຄູນ 1.6)+ 10%). ຕົວຢ່າງ: {(32 ຄູນ1.6) +10%} =56.32. ຫ້ອງໜຶ່ງ ບັນຈຸ ນັກຮຽນຫລາຍສຸດແມ່ນ 36 ຄົນ ສຳລັບຫ້ອງດຽວ . ສຳລັບ ຫ້ອງສອນ ຄວບ ແມ່ນ 40 ຄົນ, ຄວາມສູງ ຂອງຫ້ອງ ຕ່ຳສຸດແມ່ນ 3.3 ແມັດ. ຮູບແບບ ຂອງຫ້ອງຮຽນ ໂດຍ ພື້ນຖານແມ່ນເປັນຮູບສີ່ແຈສາກ ຫລື ຮູບ ສີ່ຫຼ່ຽມມົນຫົນ. *ຄວນພິຈາລະນາວ່າ ໃນເຂດພູດອຍ ບ່ອນທີ່ມີເນື້ອທີ່ຈຳກັດ, ນັກຮຽນແມ່ນຕ້ອງການ ເນື້ອທີ່ ເທົ່າກັນ. ດັ່ງນັ້ນ ຖ້າເຮັດຫ້ອງນ້ອຍເທົ່າໃດ ກໍ່ຍິ່ງບັນຈຸນັກຮຽນໄດ້ໜ້ອຍເທົ່ານັ້ນ.*
ຫ້ອງຄູ	ເນື້ອທີ່ ຕ່ຳສຸດແມ່ນ 12 ມ^2. 25 ມ^2 ສຳລັບ ອາຄານ ທີ່ມີ 5 ຫ້ອງຮຽນ ຫລື ຫລາຍກວ່ານັ້ນ
ຫ້ອງສາງ	3 ຫາ 4 ມ^2 / ຫ້ອງຮຽນ
ເພດານ	ຕິດຕັ້ງ ເພດານທີ່ກະຈາຍ ແສງດອກໄຟ ທົ່ວເຖິງ ແລະ ການປ້ອງກັນສຽງດັງ ແລະ ຄວາມ ຮ້ອນ
ພື້ນ	ແຜ່ນພື້ນ ເຍຕິງ ທີ່ແຫ້ງແລະສະອາດ
ເຟີນີເຈີ	ເລືອກ ເຟີນີເຈີທີ່ ກອງກັນຂຶ້ນໄດ້ ເພື່ອຫລີກໜ່ຽງ ຄວາມສັບສົນ ໃນເວລາທີ່ສຸກເສີນ. ເບົາເພື່ອການຍົກງ່າຍ. ຂະໜາດ ແລະ ການອອກແບບ ຄວນເໝາະສົມ ສາມາດເຮັດວຽກເປັນກຸ່ມແລະ/ຫຼື ຄົນດຽວ ໄດ້ສະບາຍ.
ເນື້ອທີ່ຫລັງຄາຍື່ນອອກ	25 ມ^2 /ຫ້ອງຮຽນ
ຫ້ອງນ້ຳ (ຢູ່ ນອກ ອາຄານ)	ໃຊ້ນ້ຳລ້າງ, ຕ່ຳສຸດ 2 ຫົວສ້ວມ, 1 ສຳລັບ ເດັກຊາຍ ແລະ ອີກ1 ສຳລັບເດັກຍິງ. ແຕ່ລະຫົວສ້ວມ ຮັບໃຊ້ 45 ຫາ ສູງສຸດ75 ຄົນ ຖ້າເພີ່ມຫ້ອງຮຽນນຶ່ງ ກໍ່ໃຫ້ເພີ້ມຫົວສ້ວມນຶ່ງຫົວ.
ການສະໜອງນ້ຳ	ລະບົບນ້ຳລິນ, ຫລື ເກັບ ນ້ຳຝົນຈາກຫລັງຄາ ລວມ ທັງອ່າງເກັບນ້ຳຫລື ນ້ຳສ້າງ.
ສິ່ງອຳນວຍຄວາມສະດວກ ພາຍນອກ:	
ເດີ່ນຫຼິ້ນ	ເນື້ອທີ່ໃຫ້ເທົ່າກັນ ກັບ ເນື້ອທີ່ ອາຄານຮຽນ (xiii)
ທາງເຂົ້າອອກ	ເພື່ອຮັບປະກັນ ຄວາມປອດໄພແລະເຂົ້າອອກໄດ້ຢ່າງຄ່ອງຕົວ ໃນລະດູຝົນ.
ທາງເນີນ(ສຳລັບລົດລໍ້)	ເພື່ອອຳນວຍຄວາມສະດວກໃນການເຂົ້າອອກໃຫ້ແກ່ຜູ້ເຖົ້າແລະ ຄົນພິການ ທາງເນີນຄວນຈະໃຫ້ ມີ ຄວາມ ເນີນປະມານ 12% (ປະມານຄວາມສູງ 0,5 ມ ໃນ 4 ມ ຍາວ)
ຮົ້ວ ແລະ ປະຕູ	ເພື່ອປ້ອງກັນ ເດີ່ນໂຮງຮຽນ ບໍ່ໃຫ້ສັດລ້ຽງເຂົ້າ.
ເສົາຫລັກທຸງ	ເພື່ອເຕົ້າໂຮມນັກຮຽນເພື່ອເຄົາລົບທຸງຕອນເຊົ້າກ່ອນເຂົ້າຮຽນ.
ຕົ້ນໄມ້	ເພື່ອໃຫ້ຮົ່ມເຢັນ ໃນລະດູຮ້ອນ.
ກະດານຂ່າວ:	ເພື່ອ ຕິດ ປະກາດ, ປະຊາສຳພັນ ແລະ ຂໍ້ມູນຂ່າວສ່ານຕ່າງໆງ່າວ ກັບນັກຮຽນ ແລະ ຄູ
“Kila”	ເພື່ອປ້ອງກັນ ປ້ອງກັນຝູງສັດລ້ຽງ (ສະເພາະເຂດທີ່ມີຄວາມສ່ຽງສູງ)

ເນື້ອທີ່ເພີ້ມ ທີ່ຕ້ອງການ ສຳລັບ ນຳໃຊ້ຫລົບ ພາຍຸໃນເວລາສຸກເສີນ

ຫ້ອງນ້ຳພາຍໃນ: 1 *ຫ້ອງສຳລັບເດັກຊາຍ*, 1 *ຫ້ອງສຳລັບເດັກຍິງ.*

ອ່າງເກັບນ້ຳ: ***ບໍລິມາດ ບັນຈຸ*** ຕ່ຳ***ສຸດ*** 500 ***ລິດ***

ເນື້ອທີ່ : 1 ม^2 / *ຄົນ*



ຮູບທີ 10. ຕົວຢ່າງ ແຜນຜັງ ເນື້ອທີ ຫ້ອງຮຽນ, ຫ້ອງຄູ ແລະຫ້ອງໄວ້ເຄື່ອງ

3.1.2 ທາງເຂົ້າອອກ ແລະ ທາງອອກສຸກເສີນ.

ທາງເຂົ້າອອກຄວນຈະເປັນທາງຊື່ກົງເທົ່າທີ່ຈະເປັນໄປໄດ້, ແລະ ບໍ່ຄວນມີສິ່ງກີດຂວາງເຊັ່ນ: ການເປີດ ປະຕູ ອອກ ແລະ ການໃຫ້ແສງສະຫວ່າງທີ່ພຽງພໍ.

ຫມາຍບອກທາງເຂົ້າອອກຢ່າງຈະແຈ້ງ.

ໄລຍະທາງໄກສຸດແຕ່ຫ້ອງຮຽນຫາທາງອອກສຸກເສີນແມ່ນ 9 ແມັດ ໃນທິດທາງດຽວ ແລະ 18 ແມັດ ໃນ ຫລາຍກ່ວານຶ່ງທິດທາງ.

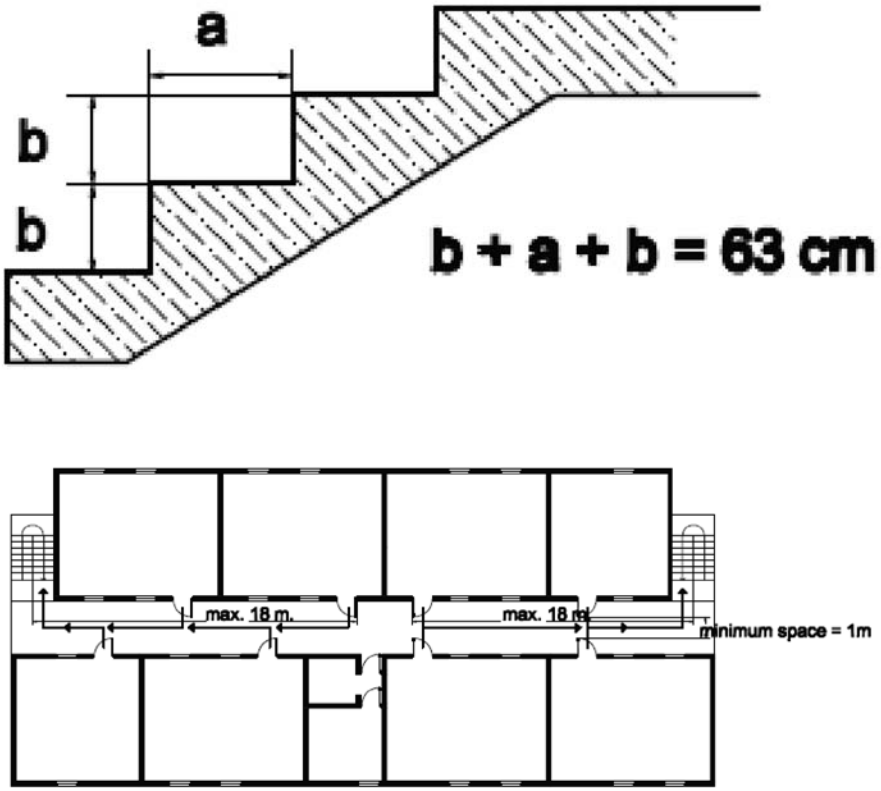
ໂຮງຮຽນ ຕ້ອງມີຢ່າງຫນ້ອຍທາງຫນີໄພນຶ່ງທາງ . ຖ້າຈຳນວນຄົນ (ເດັກນັກຮຽນ , ຄູ ແລະພະນັກງານ) ຫລາຍກ່ວາ 500 ຄົນ, ຕ້ອງໃຫ້ມີ 2 ທາງອອກ (xiv).

ໂຮງຮຽນ ຕ້ອງມີທາງເຂົ້າທີ່ຄົນພິການກໍ່ສາມາດເຂົ້າໄດ້. ປະຕູຫ້ອງຮຽນຕ້ອງກ້ວາງຢ່າງໜ້ອຍ 90 ຊມ. ສຳລັບອາຄານ ທີ່ມີສອງ ແລະ ຫລາຍຊັ້ນ ຕ້ອງໄດ້ພິຈາລະນາ ໃຫ້ມີຂັ້ນໄດສຸກເສີນເພີ່ມ.

ລວງກ້ວາງ ຕ່ຳສຸດຂອງຂັ້ນໄດຫນີໄພ ແມ່ນ 1.2 ແມັດ ສຳລັບ 150 ຄົນ**.** 1.5 ແມັດສຳລັບ 220 ຄົນ.

ຜົນບວກລວມຂອງລວງສູງ ຂອງສອງລູກຂັ້ນທາງຕັ້ງ ແລະ ລວງກ້ວາງພື້ນ ລູກຂັ້ນໄດຄວນເທົ່າກັບ63 ຊມ. ແລະ ຂະຫນາດ ລວງກ້ວາງ ຕ່ຳສຸດ ຂອງລູກຂັ້ນໄດ ແມ່ນ 27 ຊມ. ຂັ້ນໃດສູງ ແລະບໍ່ໄດ້ລົບລ່ຽມ ແມ່ນບໍ່ເໝາະສົມສຳລັບນັກຮຽນພິການທີ່ໃຊ້ໄມ້ຄ້ຳ.

ທາງອອກທຸກໆບ່ອນຕ້ອງປ່ອຍໃຫ້ ອອກຂ້າງນອກຂອງອາຄານເຖິງຊັ້ນລຸ່ມສຸດເພື່ອໄປຫາຈຸດຫລົບໄພ ໄດ້ ຢ່າງປອດໄພ.

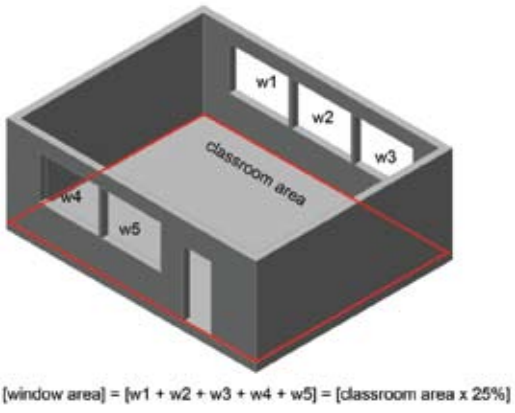


ຮູບທີ 11. ຕົວຢ່າງ ຈຸດທີ່ຕັ້ງ ຂອງຂັ້ນໄດໜີໄຟ ແລະການໄຂປະຕູອອກ

3.1.3 ແສງສະຫວ່າງ ຈາກທຳມະຊາດ

ການອອກແບບຫ້ອງຮຽນ ຄວນອອກແບບໂດຍບໍ່ໃຊ້ໄຟຟ້າຖ້າບໍ່ຈຳເປັນ. ປ່ອງຢ້ຽມ ຄວນຈະມີຂະໜາດໃຫຍ່ສຸດໂດຍໄຂອອກໃສ່ຝາ. ແຫຼ່ງກຳເນີດຫຼັກຂອງແສງສະຫວ່າງຄວນມາຈາກຝາເບື້ອງຊ້າຍຂອງຫ້ອງຮຽນ. ທາງຫນ້າ ແລະ ດ້ານຫລັງຂອງຫ້ອງຮຽນບໍ່ຄວນເຮັດປ່ອງຢ້ຽມ. ເນື້ອທີ່ສຸດທິຂອງປ່ອງຢ້ຽມຂອງຫ້ອງຮຽນຄວນມີຕ່ຳສຸດ 25% ຂອງເນື້ອທີ່ພື້ນຫ້ອງ (ສຳລັບຫ້ອງຮຽນ ທີ່ມີເນື້ອທີ່ 50 ມ^2, ຕ່ຳສຸດ ແມ່ນຕ້ອງມີເນື້ອທີ່ປ່ອງຢ້ຽມ 12.5 ມ^2)

ຮູບທີ 12. ເນື້ອທີ ສຸດທິຂອງປ່ອງຢ້ຽມ ທຽບໃສ່ເນື້ອທີ ແຜ່ນພື້ນ



3.1.4 ການລະບາຍອາກາດໂດຍທຳມະຊາດ.

ສຳລັບອາຄານການສຶກສາ ຂັ້ນພື້ນຖານ ຄວນຫລີກເວັ້ນ ການໃຊ້ອຸບປະກອນກຳເນີດຄວາມເຢັນ ຫລື ຄວາມຮ້ອນ. ການປ້ອງກັນ ຕໍ່ລົມເຢັນໃນຊ່ວງລະດູແລ້ງຄວນ ໃຫ້ມີການດຸ່ນດ່ຽງດ້ວຍການລະບາຍອາກາດ ທີ່ຖືກຕ້ອງໃນຊ່ວງລະດູຮ້ອນ ແລະຊ່ວງອາກາດຊຸ່ມ. ຈຸດປະສົງ ຫຼັກກໍ່ຄືການຄວບຄຸມການໝູນວຽນຂອງອາກາດ ແບບ ປົກກະຕິ. ສິ່ງ ເຫລົ່ານີ້ສາມາດເຮັດໄດ້ໂດຍການຈັດວາງປ່ອງລົມໃຫ້ຖືກຕ້ອງສຳລັບເຂດທົ່ງພຽງ, ແລະເຮັດປ່ອງຢ້ຽມແບບປິດເປີດໄດ້ ຫລື ແຜ່ນບັງລົມໃນເຂດເທີງພູ. ຍິ່ງອາກາດຮ້ອນ ແລະມີຄວາມຊຸ່ມຫລາຍເທົ່າໃດ ການລະບາຍອາກາດ ຍິ່ງສຳຄັນ.

ສຳລັບການວາງແຜນ ສຳຄັນແມ່ນໃຫ້ສັງເກດຄວາມແຕກຕ່າງລະຫວ່າງລົມປົກກະຕິແລະລົມທີ່ເກີດບາງຄັ້ງບາງຄາວເຊັ່ນ : ລົມພາຍຸໄຕ້ຝຸ່ນ. ເພື່ອອອກແບບລະບົບລະບາຍອາກາດທີ່ເໝາະສົມ ຄວນຮູ້ ຂໍ້ມູນດັ່ງຕໍ່ໄປນີ້:

- ລັກສະນະຂອງລົມເປັນແນວໃດ (ຄວາມໄວ, ພັດໄປທິດທາງໃດ, ອຸນຫະພູມ)?
- ການປ່ຽນແປງ ລັກສະນະ ຂອງລົມ ຕອນກາງເວັນ ແລະຕາມລະດູການເປັນແນວໃດ?
- ເວລາໃດທີ່ຕ້ອງເພີ່ມ ການໝູນວຽນຂອງອາກາດ ເພື່ອລະບາຍຄວາມຮ້ອນຫລືຄວາມເຢັນ, ເວລາໃດ ທີ່ ບໍ່ຕ້ອງການ?
- ເວລາໃດທີ່ຕ້ອງການໃຫ້ມີການໝູນຂອງອາກາດ,ໃນຫ້ອງໃດແລະໃນເຂດໃດແລະໃນລະດັບໃດໃນຫ້ອງ?

3.1.5 ນ້ຳໃຊ້

ແຕ່ລະໂຮງຮຽນ ຕ້ອງມີການສະໜອງນ້ຳໃຊ້ແລະອ່າງເກັບນ້ຳ. ການສະໜອງນ້ຳສ່ວນຫລາຍແມ່ນຜ່ານທໍ່ (ລະບົບນ້ຳລິນ)
ຈາກແຫລ່ງສະໜອງນ້ຳຂອງຊຸມຊົນ. ໂດຍທົ່ວໄປມີ ແຫລ່ງນ້ຳສາມປະເພດທີ່ສາມາດສະໜອງນ້ຳໄດ້: ນ້ຳໜ້າດິນ, ນ້ຳໃຕ້ດິນ ແລະ ນ້ຳຝົນ.

ນ້ຳໜ້າດິນ: ລວມມີໜອງ/ທະເລສາບ, ແມ່ນ້ຳ, ສະນ້ຳ ແລະ ບໍ່ນ້ຳເທິງໜ້າດິນອື່ນໆ. ນ້ຳເທິງໜ້າດິນ ເປັນແຫລ່ງນ້ຳ ທີ່ຫາງ່າຍ. ນ້ຳໜ້າດິນເປິເປື້ອນໄດ້ງ່າຍ ແລະ ຕ້ອງໄດ້ຮັກສາ ຫລື ຂ້າເຊື້ອ ຖ້າຕ້ອງການໃຊ້ ເປັນນ້ຳດື່ມ. ຄວາມຂຸ່ນແລະປະລິມານໄຫຼຂອງນ້ຳໜ້າດິນແມ່ນຈາກການປ່ຽນແປງໄປຕາມ ລະດູການ.

ນ້ຳໃຕ້ດິນ: ແມ່ນພົບເຫັນຢູ່ຕາມຊັ້ນຂອງພື້ນດິນທີ່ອີມນ້ຳທີ່ຢູ່ໃຕ້ດິນເຮັດໃຫ້ນ້ຳໃຕ້ດິນບໍ່ເປິເປື້ອນໄດ້ງ່າຍ ຖ້າທຽບໃສ່ ນ້ຳໜ້າດິນແຕ່ ນ້ຳໃຕ້ດິນກ່ຳງ່າຍຈາກການ ຕິດເຊື້ອບັກເຕເລຍທີ່ມາຈາກລະບົບ ສຸກຂາພິບານ ທີ່ບໍ່ມີ ປະສິດທິພາບ ຫຼື ເປ່ເພ ແລະ ສິ່ງ ເປິເປື້ອຈາກສານເຄມີຕົວຢ່າງ ທາດສານໜູ arsenic .

ນ້ຳຝົນ: ນ້ຳຝົນທີ່ໂຕ່ງຈາກຫລັງຄາບໍ່ຄວນເປັນແຫລ່ງສະໜອງນ້ຳຕົ້ນຕໍໃຫ້ແກ່ໂຮງຮຽນ ແຕ່ເປັນພຽງ ການ ສະໜອງແບບຊົ່ວຄາວ. ການໃຊ້ລະບົບເກັບນ້ຳຝົນນີ້ ຕ້ອງໄດ້ ສຶກສາໃຫ້ຮູ້ ສະເພາະເພື່ອໃຫ້ບຸກຄົນຮັບຜິດຊອບໃນການຮັກສາຄຸນນະພາບຂອງການສະໜອງ ນ້ຳ ຕາມລະບົບນີ້ໂດຍການອະນາໄມຮາງລິນ ແລະ ການອັດປິດຝາອ່າງ. ຖ້າ ໃຊ້ ນ້ຳສຳລັບດື່ມ ຄຸນນະພາບຂອງນ້ຳ ຕ້ອງໄດ້ກວດສອບໂດຍການທົດລອງຄວາມ ສະອາດຂອງນ້ຳໂດຍຖືກຕ້ອງຕາມວິທີ.

3.1.6 ສຸຂາພິບານ

ເພື່ອໃຫ້ຖືກຫລັກອະນາໄມ ໂຮງຮຽນຕ້ອງມີຫ້ອງນ້ຳ. ລະບົບທີ່ໃຊ້ນ້ຳລ້າງແມ່ນຖືກຫລັກອະນາໄມດີ. ໃນກໍລະນີພິເສດ ທີ່ຂຸມຊຶມຂາດນ້ຳ, ການກຳຈັດອາຈົມຕ້ອງເຮັດໃຫ້ຖືກຕ້ອງ ເພື່ອບໍ່ໃຫ້ເກີດອັນຕະລາຍຍ້ອນ ໂລກລະບາດ ຊຶ່ງເກີດຈາກອາຈົມທີ່ຖືກນ້ຳພັດ, ດິນ ແລະ ນ້ຳເປື້ອນ, ສັດປີກ, ສັດລ້ຽງ, ແລະ ແມງວັນ. ທາງເລືອກ ສຳລັບ ຫ້ອງນ້ຳ ແມ່ນ ສ້ວມຖ່າຍແບບຂຸມວິດຊຶ່ມ, ແບບຫ້ອງຝາປິດ ຫລື ຫ້ອງນ້ຳແບບເຮັດຝຸ່ນທຳມະຊາດ (ເບິ່ງ ພາກຜະໜວກ 3. ຂຸມອາຈົມ ທີ່ບໍ່ມີນ້ຳ (ວິດແຫ້ງ))

ຄວນມີຫ້ອງນ້ຳ ແຍກລະຫວ່າງຍິງແລະຊາຍ. ຄວາມເປັນສ່ວນຕົວ,ຄວາມສະອາດ ແລະ ປອດໄພ ແມ່ນ ຂໍ້ພິຈາລະນາຫຼັກ ໃນເວລາວາງແຜນຈຸດທີ່ຕັ້ງ ແລະ ອອກແບບຫ້ອງນ້ຳ. ນ້ຳເປື້ອນ ຕ້ອງເກັບໄວ້ໃນຂຸມວິດ ຫລື ໃນເນື້ອທີ່ ສຳລັບການບຳບັດ ຫລື ເນື້ອທີ່ຕະກອນໃນບ່ອນທີ່ເໝາະສົມ.ວິດຊຶ່ມໂດຍທົ່ວໄປແມ່ນການປະສົມປະສານກັນ ຂອງການຕົກຕະກອນ ເທື່ອລະນ້ອຍຜ່ານຂະບວນການ ຈາກບ່ອນຫ້ອງເກັບ,ຫ້ອງກ່ອນ ການຕະກອນແລະ ຜ່ານການກັ່ນຕອງໄປຫາຂຸມພັກນ້ຳ ກ່ອນທີ່ນ້ຳໃສ ຈະຖືກປ່ອຍໄປຫາພື້ນດິນ. ສ່ວນຫລາຍ ທີ່ນຳໃຊ້ແມ່ນຂຸມຕົກຕະກອນຂະໜາດນ້ອຍທີ່ບັນຈຸນ້ຳເສຍໄດ້ 1 ຫາ 2 ແມັດກ້ອນ, ສຳລັບ 1 ຫ້ອງຮຽນ ທີ່ສາມາດໃຊ້ໄດ້ປະມານ 6 ຫາ 10 ເດືອນ, ຫລັງຈາກນັ້ນຕ້ອງໄດ້ມີການບຳລຸງຮັກສາ ແລະ ດູດອອກ.

ເວລາອອກແບບ ລະບົບສຸກຂາພິບານ ສິ່ງທີ່ຄວນຄຳນຶງ ແລະ ເອົາໃຈໃສ່ຄື:

- ພູມສັນຖານ : ສະພາບຂອງດິນ ແລະ ລະດັບນ້ຳໃຕ້ດິນ ເໝາະສົມສຳລັບເຮັດວິດຊຶມໄດ້ບໍ່?
- ຂະໜາດຂອງພື້ນທີ່ : ມີເນື້ອທີ່ພຽງພໍສຳລັບກໍ່ສ້າງ ລະບົບສຸກຂາພິບານບໍ່? (ຢ່າງ ໜ້ອຍ 0.1 ເຮັກຕາ)
- ຫລີກຫ່ຽງ ການສ້າງລະບົບ ລະບົບສຸກຂາພິບານຢູ່ເໜືອແຫຼ່ງນ້ຳສະອາດ.
- ຕ້ອງສ້າງຫ້ອງນ້ຳຢູ່ ເບື້ອງຫລັງອາຄານ ເພາະວ່າຖ້າມີການປຸກສ້າງເພີ່ມເຕີມ ໃນອະນາຄົດກໍ່ສາມາດປຸກໄດ້ ຕາມແລວຂອງອາຄານທີ່ມີໂດຍທີ່ບໍ່ຈຳເປັນຕ້ອງຍົກຍ້າຍຫ້ອງນ້ຳອອກ.
- ສິ່ງອຳນວຍຄວາມສະດວກສຳລັບຄູອາຈານຕ້ອງໄດ້ແຍກອອກສຳລັບຊາຍ ແລະ ຍິງ.
- ອອກແບບ ແລະເລືອກທີ່ຕັ້ງຫ້ອງນ້ຳ ເພື່ອໃຫ້ເດັກນັກຮຽນ ສາມາດໃຊ້ຮ່ວມກັນລະຫວ່າງກຸ່ມຫ້ອງຮຽນ ເພື່ອ ປ້ອງກັນເດັກນ້ອຍທີ່ມີອາຍຸນ້ອຍກ່ວາ.

- ຫ້ອງນ້ຳຕ້ອງຫ່າງຈາກອາຄານທີ່ໃກ້ສຸດ ຢ່າງໜ້ອຍແມ່ນ 20 ແມັດ.
- ຫ້ອງນ້ຳຕ້ອງມີ ອາກາດສົດເຂົ້າໂດຍຜ່ານປ່ອງລົມ ຫຼືແລະ ຊ່ອງ ລະບາຍອາກາດ. ຢ່າສ້າງຫ້ອງນ້ຳຕິດກັບ ບ່ອນປຸງແຕ່ງອາຫານ.
- ຂຸມວິດຕ້ອງຕັ້ງຢູ່ ຢ່າງໜ້ອຍ 30 ແມັດ ຫ່າງຈາກ ນ້ຳຫ້ວຍ ທີ່ໃກ້ທີ່ສຸດ (xv), 5 ແມັດ ຈາກກ໊ອກນ້ຳທີ່ ໃກ້ສຸດ, 3 ແມັດ ຫ່າງຈາກເຮືອນທີ່ໃກ້ທີ່ສຸດ ແລະ 3 ແມັດ ຫ່າງຈາກເຂດດິນອ້ອມຂ້າງ.
- ລະດັບພື້ນຂອງອ່າງນ້ຳໄສຂອງວິດຕ້ອງຢ່າງໜ້ອຍ 1.5 ແມັດ ສູງກ່ວາລະດັບນ້ຳໃຕ້ດິນ.
- ທີ່ຕັ້ງບ່ອນນ້ຳເສຍຕ້ອງຢູ່ ລະດັບຕ່ຳກ່ວາລະດັບນ້ຳໃຕ້ດິນ.
- ຫ້າມລະບາຍນ້ຳເປື້ອນ ທີ່ຍັງບໍ່ທັນໄດ້ບຳບັດ ລົງໃສ່ແຫລ່ງນ້ຳສະອາດ (ໜອງ,ແມ່ນ້ຳ,ນ້ຳໃຕ້ດິນ).
- ຮັບປະກັນໃຫ້ມີທາງເຂົ້າໄປຫາຂຸມວິດທີ່ສະດວກ ເພື່ອການບຳລຸງຮັກສາ ແລະ ດູດສ້ວມ.
- ສິ່ງສຳຄັນແມ່ນໃຫ້ມີຮ່ອງລະບາຍນ້ຳຝົນທີ່ພຽງພໍ. ລະບົບລະບາຍນ້ຳຝົນທີ່ບໍ່ພຽງພໍ ແລະບໍ່ໄດ້ຮັບການ ບຳລຸງຮັກສາທີ່ດີ ສາມາດເປັນສາເຫດໃຫ້ນ້ຳຖ້ວມ ແລະ ມີຜົນກະທົບ ຂ້າງຄຽງທີ່ກ່ຽວຂ້ອງອື່ນໆ.
- ບໍ່ໃຫ້ປ່ອຍນ້ຳເປື້ອນລົງ ຫາຮ່ອງສາທາລະນະ.

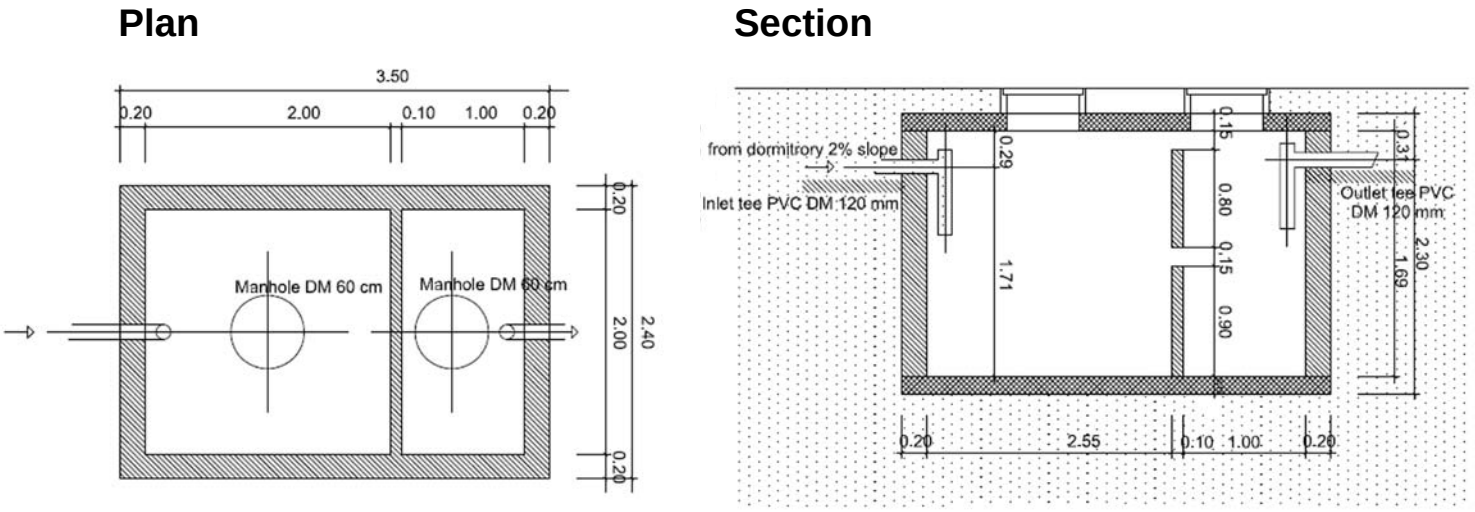


Figure 13. Example of septic tank for 64 students. College Dormitory in Luang Prabang.

3.2 ການປະກອບເຄື່ອງເຟີນີເຈີ ແລະ ອຸປະກອນ.

3.2.1 ໂຮງຮຽນປະຖົມສຶກສາ (xvi)

ເຟີນີເຈີ ສຳລັບນັກຮຽນ ຕ້ອງແຂງທົນທານເຮັດດ້ວຍໄມ້ເນື້ອແຂງໃນທ້ອງຖິ່ນ. *ຄວນປັບ* ຄວາມສູງຂອງຕັ່ງຕາມ ເກນອາຍຸ*ຂອງ*ເດັກນັກຮຽນ. ໜ້າໂຕະຕ້ອງສະອາດ ແລະ ກ້ຽງດີ. ຄວາມຕ້ອງການຂັ້ນຕ່ຳສຸດມີ:

ສຳລັບຫ້ອງຮຽນ:

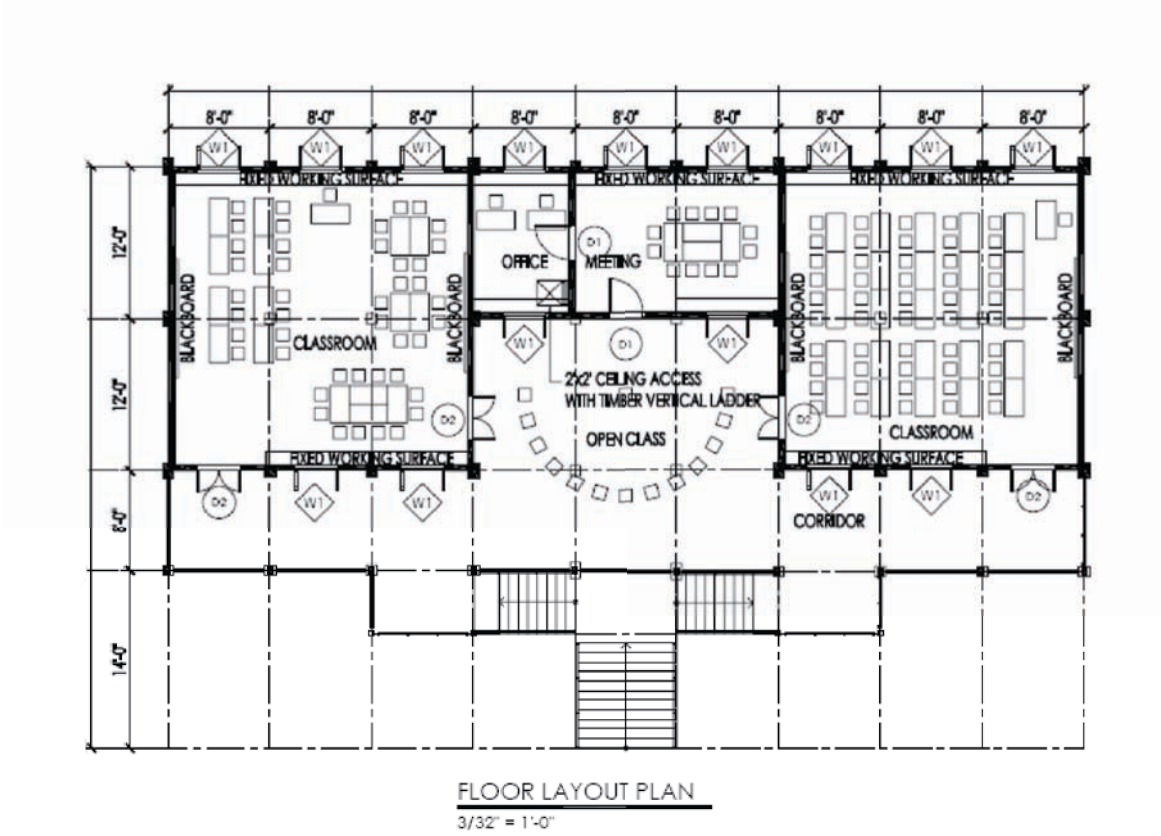
ໂຕະ ສຳລັບນັກຮຽນ 2 ຄົນ, ຂະໜາດ 45 ຊມ x 90 ຊມ ສູງ 55 ຊມ , 20 ໜ່ວຍ.
ຕັ່ງນັ່ງ ສຳລັບນັກຮຽນ 30 ຊມ x 30 ຊມ ລວງສູງ 35 ຊມ , 40 ໜ່ວຍ.
ໂຕະ ສຳລັບຄູ 70 ຊມ x 30 ຊມ ລວງສູງ 35 ຊມ , 1 ໜ່ວຍ.
ຕັ່ງຄູ 1 ໜ່ວຍ
ຖ້ານ ກິດຈະກຳ ລຽບຕາມປ້ອງຢ້ຽມ (ແບບທາງເລືອກ)
ຕູ້ເອກະສານ, ລວງສູງ ສູງສຸດ 1.50 ແມັດ.
ກະດານດຳ ສະເໜີ ໃຫ້ ໃຊ້ ກະດານ ເຄື່ອນທີ່ ສຳລັບ ຫ້ອງຄວບ.

ສຳລັບຫ້ອງຄູ:

ຕູ້ເອກະສານ ທີ່ສາມາດລ໋ອກໄດ້, 1.20 ແມັດ x 0.60 ແມັດ x 2.00 ແມັດ (ກ້ວາງ x ເລິກx ສູງ) ສຳລັບ ຫ້ອງໜຶ່ງ
ໂຕະ (2 ຄົນຕໍ່ຫ້ອງນຶ່ງ)
ຕັ່ງ (2 ຄົນຕໍ່ຫ້ອງນຶ່ງ)

ຫ້ອງມຸ້ງນເຄື່ອງ:

ຖ້ານໄວ້ເຄື່ອງສຳລັບແຕ່ລະຫ້ອງ ຕ່ຳສຸດ 3.6 ແມັດ (3 ຖ້ານ ຄວາມກ້ວາງຂອງແຕ່ລະອັນ 1.2 ແມັດ).



ຮູບທີ 14. ຕົວຢ່າງການປະກອບເຄື່ອງເຟີນີເຈີ ໃນຫ້ອງຮຽນ ໂຮງຮຽນປະຖົມສຶກສາ. ຫ້ອງດຽວແລະຫ້ອງຄວບ. ໂຄງການກໍ່ສ້າງໂຮງຮຽນປະຖົມ ໃນ Ayeyarwaddy Division, Myanmar

3.2.2 ໂຮງຮຽນມັດທະຍົມ

ຫ້ອງຮຽນ:

ກ) ໂຕະ ສຳລັບນັກຮຽນ 2 ຄົນ, ຂະໜາດ 50 ຊມ x 100 ຊມ, ຄວາມສູງ 62 ຊມ, ຈຳນວນ 20 ໜ່ວຍ

ຂ) ຕັ່ງນັກຮຽນ ຂະໜາດ 40 ຊມ x 40 ຊມ, ຄວາມສູງ 41 ຊມ, ຈຳນວນ 40 ໜ່ວຍ

ຄ) ໂຕະ ຂອງຄູ ຂະໜາດ 70 ຊມ x 120 ຊມ, ຈຳນວນ 1 ໜ່ວຍ

ງ) ຕັ່ງໃຫ້ຄູ1ໜ່ວຍ

ຈ) ເຄື່ອງຫ້ອຍ ແຜ່ນ ໂປດສະເຕ ແລະ ແຜ່ນທີ່ 1 ອັນ

ສ) ຮູປັກສຽບໄຟຟ້າ(ຫຼາຍຈຸດ)

ຊ) ຕູ້ຂະໜາດ 180 ຊມ x 60 ຊມ x 200 ຊມ (ກ້ວາງ x ເລິກ x ສູງ)

ຍ) ກະດານດຳຂະໜາດຕິດຝາ 180 ຊມ x 120 ຊມ 1 ແຜ່ນ

ຫ້ອງຄູ:

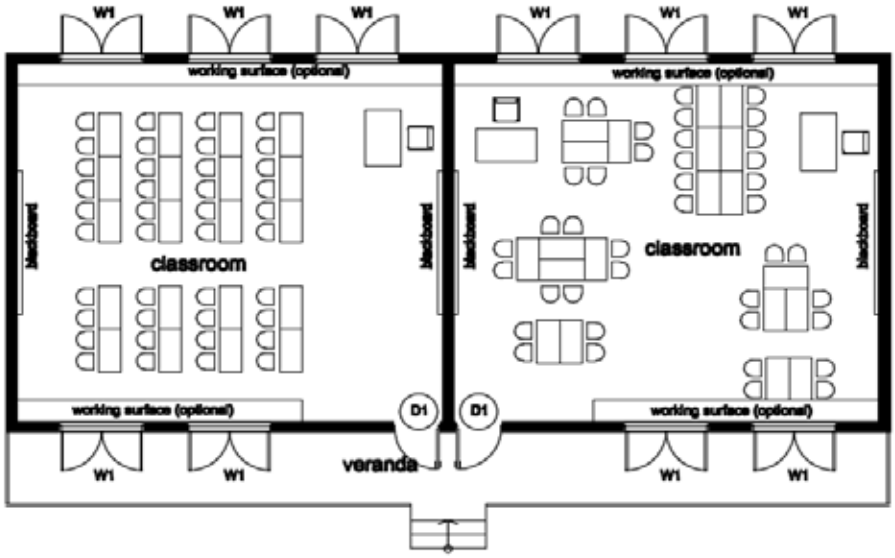
ກ) ຕູ້ເອກະສານ ທີ່ສາມາດລ໋ອກໄດ້, 120 ຊມ x 60 ຊມ x 200 ຊມ (ກ້ວາງ x ເລິກ x ສູງ) ສຳລັບ ຫ້ອງນຶ່ງ

ຂ) ໂຕະ (2 ຄົນຕໍ່ຫ້ອງນຶ່ງ)

ຄ) ຕັ່ງ (2 ຄົນຕໍ່ຫ້ອງນຶ່ງ)

ຫ້ອງມຸ້ງນເຄື່ອງ:

ຖ້ານໄວ້ເຄື່ອງສຳລັບແຕ່ລະຫ້ອງ ຕ່ຳສຸດ 3.6 ແມັດ



ຮູບທີ 15. ຕົວຢ່າງການ ປະກອບເຄື່ອງເຟີນີເຈີ ໃນຫ້ອງຮຽນ

3.3 ສິ່ງອຳນວຍຄວາມສະດວກ ພາຍນອກອາຄານ (ກາງແຈ້ງ)

3.3.1 ການກິລາ ແລະ ການພັກຜ່ອນ

ເພື່ອສະດວກໃນການເຄື່ອນໄຫວ ນອກຫລັກສູດ, ການຈັດຕັ້ງ,ຄວາມປອດໄພ ແລະ ເຫດຜົນຫາງ ດ້ານເສດຖະກິດ, ສິ່ງອຳນວຍຄວາມສະດວກກາງແຈ້ງຄວນຢູ່ພາຍໃນເດີ່ນ ໂຮງຮຽນ. ຖ້າເງື່ອນໄຂ ຫາກບໍ່ ອຳນວຍໃຫ້ສ້າງເດີ່ນກິລາໃກ້ກັບໂຮງຮຽນ, ກໍ່ບໍ່ຄວນ ຫ່າງກັນດ້ວຍການຍ່າງ ບໍ່ໃຫ້ ເກີນ 5 ຫາ 10 ນາທີ.

ຄວາມຕ້ອງການຕ່ຳສຸດ ສຳລັບການກິລາ ແລະ ການພັກຜ່ອນແມ່ນໃຫ້ມີເດີ່ນຫຼິ້ນທົ່ວໄປທີ່ມີ ເນື້ອທີ່ ເທົ່າກັບເນື້ອທີ່ອາຄານໃນໂຮງຮຽນ. ຂໍ້ສະເໜີແນະແມ່ນໃຫ້ມີເດີ່ນ ສຳລັບ ເດີ່ນບານເຕາະ, ເດີ່ນບານສົ່ງ ແລະ ເດີ່ນຫັດກາຍະບໍລິຫານ.

ຂະໜາດ ມາດຕະຖານສາກົນ ສຳລັບເດີ່ນຄູ່ ທີ່ສາມາດໃຊ້ເປັນ ສຳລັບເດີ່ນບານບ້ວງ, ເດີ່ນເຕາະ ບານ ແລະ ບານສົ່ງໄດ້ ແມ່ນ:

22 x 44 x 7 [ແມັດ] ແບ່ງອອກເປັນ 2 ສ່ວນ:

22 x 28 + 22 x 16 (xvii)

3.3.2 ຮົ້ວ

ຕ້ອງເຮັດຮົ້ວທີ່ແຂງແຮງ ແລະ ສົມບູນເພື່ອອ້ອມເນື້ອທີ່ເດີ່ນໂຮງຮຽນ. ເພື່ອປ້ອງກັນເດີ່ນຫລົ້ນ ແລະ ອາຄານຈາກສັດລ້ຽງ ແລະ ສັດປ່າ. ໃນຂະນະດຽວກັນ ຮົ້ວຍັງປ້ອງກັນບໍ່ ໃຫ້ມີການບຸກລຸກຈາກຈາກຜູ້ບຸກລຸກ ພາຍນອກ ແລະປະຊາຊົນອ້ອມຂ້າງ ແລະ ອື່ນໆໄດ້.

ອາຄານຂອງໂຮງຮຽນຄວນຈະຕັ້ງຫ່າງອອກຈາກຮົ້ວຢ່າງໜ້ອຍປະມານ 2 ແມັດ. ທາງດ້ານຫນ້າຢ່າງ ໜ້ອຍປະມານ 10 ແມັດ, ໄລຍະຫ່າງລະຫ່ວາງອາຄານຮຽນ ຢ່າງໜ້ອຍປະມານ 4 ແມັດ ຈາກ ເປີ້ນພູ (xviii)

3.3.3. ການຕົບແຕ່ງ ສະຖານທີ່

ຟື້ນຄືນເນື້ອທີ່ທຳມະຊາດທີ່ຖືກທຳລາຍໃຫ້ເປັນປົກກະຕິ.

ນຳໃຊ້ ຊະນິດ ຕົ້ນໄມ້ ທີ່ເກີດກັບທີ່ ເພື່ອ ການຕົບແຕ່ງ.

ພາກ 4.

ມາດຕະຖານການອອກແບບດ້ານໂຄງສ້າງ

4.1 ການກຳນົດໃນການອອກແບບ

4.1.1 ມາດຕະຖານທາງດ້ານ ວິສະວະກຳ

(ເບິ່ງ ມາດຕະຖານ ທາງດ້ານ ວິສະວະກຳຂອງໄທ ເຊິ່ງ ໃຊ້ໂດຍກະຊວງໂຍທາທິການ)

4.1.2 ການອອກແບບ ໂຄງສ້າງ

ຂໍ້ສົມມຸດຖານ ໃນການກຳນົດນ້ຳໜັກ ໃນການອອກແບບ ຄິດໄລ່ໂຄງສ້າງ
ປະເມີນແຮງລົມໂດຍອີງໃສ່ ພື້ນຖານ ຂອງຂໍ້ມູນຄວາມໄວຂອງລົມ ປີ 2008.
(*ເບິ່ງ* ພາກຜະໜວກ 4a.)

ຈຸດທີ່ຕັ້ງ	ຄວາມໄວສູງສຸດ ຂອງລົມ (ມ/ວນທ)	ນ້ຳໜັກແຮງລົມ (ກລ/ມ2)	ທິດທາງລົມ
ນະຄອນຫລວງວຽງຈັນ	49 (ເດືອນ ເມສາ)	80	ເໜືອ
ຜົ້ງສາລີ		9.9	ຕາເວັນຕົກ, ຕາເວັນອອກ
ບໍແກ້ວ		39	ຕາເວັນອອກສຽງເໜືອ
ຫລວງນ້ຳທາ	22 (ເດືອນ ມັງກອນ)	32	ຕາເວັນອອກສຽງໄຕ້
ອຸດົມໄຊ	13 (ເດືອນ ກຸມພາ ແລະ ເດືອນ ເມສາ)	10.8	ຕາເວັນຕົກ
ຫລວງພຣະບາງ	32 (ເດືອນ ສິງຫາ)	67	ຕາເວັນຕົກ
ຊຳເໜືອ	20 (ເດືອນ ກໍລະກົດ)	26	ຕາເວັນຕົກ
ໄຊຍະບຸລີ	28 (ເດືອນ ເມສາ)	51.1	ຕາເວັນຕົກສຽງໄຕ້
ຊຽງຂວາງ	30 (ເດືອນ ພຶດສະພາ)	58	ໄຕ້
ໂພນໂຮງ	25 (ເດືອນ ເມສາ)	39	ຕາເວັນອອກສຽງໄຕ້
ປາກຊັນ	11 (ເດືອນ ພຶດສະພາ)	8	ຕາເວັນອອກ
ທ່າແຂກ	19 (ເດືອນ ກັນຍາ)	23.4	ຕາເວັນຕົກ
ສະຫວັນນະເຂດ	27 (ເດືອນ ເມສາ)	46.3	ເໜືອ ຕາເວັນອອກສຽງເໜືອ
ສາລະວັນ	36 (ເດືອນ ກຸມພາ)	73	ເໜືອ
ປາກເຊ	25 (ເດືອນ ມີນາ ແລະເດືອນ ເມສາ)	39	ຕາເວັນອອກສຽງໄຕ້ ແລະ ຕາເວັນຕົກສຽງໄຕ້
ເຊກອງ	20 (ເດືອນຕຸລາ)	26	ເໜືອ ຕາເວັນຕົກສຽງເໜືອ
ອັດຕະປື	25 (ເດືອນທັນວາ)	39	ເໜືອ ຕາເວັນອອກສຽງເໜືອ

ແຮງສັ່ນສະເທືອນ ຈາກແຜ່ນດິນໄຫວ: *ເຂດ* 2
ລະດັບນ້ຳຖ້ວມ: ຂຶ້ນກັບແຕ່ລະເຂດ. ລະດັບພື້ນອາຄານຊັ້ນລຸ່ມ ໃຫ້ສູງກ່ວາ ລະດັບພື້ນດິນຢ່າງໜ້ອຍ 0.6 *ແມັດ*
(*ເບິ່ງ ເບິ່ງ* ພາກຜະໜວກ 4b. *ລະດັບນ້ຳຖ້ວມ ເທິງໜ້າດິນ*)
ຄວາມສາມາດຮັບນ້ຳໜັກຂອງດິນ : 200 KN/ມ^2 *ສຳລັບ* ດິນທຳມະດາ, ສຳລັບດິນອ່ອນ ຕ້ອງໄດ້ທົດສອບຄວາມສາມາດ ຮັບນ້ຳໜັກຂອງດິນ ໂດຍວິສະວະກອນກ່ຳສ້າງ.

ພາກ 5.

ບາດກ້າວໃນການວາງແຜນ ແລະ ການຈັດຕັ້ງປະຕິບັດ

ໜຶ່ງໃນບັນດາກິດຈະກຳຂອງຂອບການພັດທະນາຂະແໜງການສຶກສາ ໃນ ສປປ ລາວ, ແມ່ນເພື່ອ ກະກຽມ ແລະ ຮັບຮອງຄູ່ມືແນະນຳໃນການອອກແບບ ແລະ ປະກອບອຸບປະກອນໃຫ້ແກ່ການສຶກສາຮຽນຮ່ວມ ໃນໂຮງຮຽນແລະເງື່ອນໄຂໃນການເປີດໂຮງຮຽນດັ່ງກ່າວ. ເພີ່ມຈຳນວນໂຮງຮຽນ ຮຽນຮ່ວມຂຶ້ນໂດຍອີງຕາມຈຳ ນວນເດັກດ້ອຍໂອກາດພາຍໃນເມືອງ ແລະທົ່ວແຂວງ (xix).

ເປົ້າໝາຍ ຂອງການພັດທະນາສິ່ງອຳນວຍຄວາມສະດວກ

ສະໜອງຫ້ອງຮຽນໃໝ່ ແລະ ຫ້ອງເພີ່ມ ພ້ອມ ການ ສິດສອນຫ້ອງຄວບ ໃນບ້ານ ແລະ ກຸ່ມບ້ານ ທີ່ບໍ່ມີໂຮງຮຽນ ປະຖົມສົມບູນທີ່ສອນຄົບ 5 ຂັ້ນຮຽນ	*ເປົ້າໝາຍ:* ສະໜອງໃຫ້ໄດ້ ເຖິງ 85% ໃນປີ 2015
ເລີ້ມໃຊ້ລະບົບໂຮງຮຽນສາມັນສຶກສາ ຂັ້ນພື້ນຖານ ສຳລັບ ປ1- ມ4 ໂດຍການສະໜອງຫ້ອງຮຽນເພີ່ມເຕີມ ໃນເຂດທີ່ໄດ້ ເລືອກເຟັ້ນ ເຊິ່ງຍັງບໍ່ທັນມີ ສະຖານທີ່ຮຽນ ສຳລັບ ຊັ້ນ ມ1 ເຖິງ ມ4	*ເປົ້າໝາຍ:* ສະໜອງໃຫ້ໄດ້ 85% ໃນປີ 2015, ມີຫ້ອງຮຽນ ເພີ່ມເຕີມ ຂັ້ນ ມ1- ມ4 ອີງຕາມ ອັດຕາສ່ວນ ມັດທະຍົມຕອນຕົ້ນ 1 ຫລັງ ຕໍ່ໂຮງຮຽນປະຖົມ 4 ຫລັງ.
ສະໜອງ ຫ້ອງຮຽນເພີ່ມເຕີມ ແລະ ສະຖານທີ່ ສຳລັບການສຶກສາ ຊັ້ນມັດທະຍົມຕອນປາຍ, ສູນອົບຮົມ ວິຊາຊີບແບບ ປະສົມ ແລະການຍົກ ລະດັບບັນດາສະຖາບັນສ້າງຄູ ເພື່ອເປີດສອນ ລະດັບປຣິຍາຕຣີ ໄດ້ເຕັມສ່ວນ ຊຶ່ງ ອາດຈະຕັ້ງຢູ່ ສະຖານທີ່ດຽວກັນ	*ເປົ້າໝາຍ:* ສຳເລັດ ການສະໜອງສິ່ງອຳນວຍ ຄວາມສະດວກຕ່າງໆ ໃນປີ 2015

5.1 ຂະບວນການໂດຍລວມ

ໃນຂະບວນການໄດ້ ມີການແບ່ງເປັນໄລຍະຄື: ກ) ການວາງແຜນ ແລະ ຂ) ໄລຍະການປະຕິບັດວຽກ ກໍ່ສ້າງ

ກ) ໄລຍະການວາງແຜນ ລວມມີບາດກ້າວຕໍ່ໄປນີ້:

ບາດກ້າວ 1 : ໄລຍະ 1: ການສະເໜີຄຳຮ້ອງ. ຍື່ນຄຳຮ້ອງ ຕາມແບບຟອມໂດຍຊຸມຊົນ/ຫ້ອງການ ສຶກສາທິການເມືອງ ໄປຫາພະແນກ ສຶກສາທິການແຂວງ (ອີງຕາມ ພາກ 5.2)

ບາດກ້າວ 2 : ອະນຸມັດ ໄລຍະ 1 ທີ່ສະເໜີ ໂດຍພະແນກສຶກສາທິການແຂວງ

ບາດກ້າວ 3 : ໄລຍະ 2: ການສະເໜີຄຳຮ້ອງ. ສະເໜີໂຄງການທີ່ສະເໜີໂດຍຊຸມຊົນ/ຫ້ອງການ ສຶກສາທິການເມືອງ/ພະແນກ ສຶກສາທິການແຂວງ ຫາ ກະຊວງສຶກສາທິການ (ອີງຕາມ ພາກ 5.2) (ເບິ່ງເອກະສານພາກຜະໜວກ 5: ແບບ ຟອມການຄຸ້ມຄອງ ແລະ ການວິທີການ)

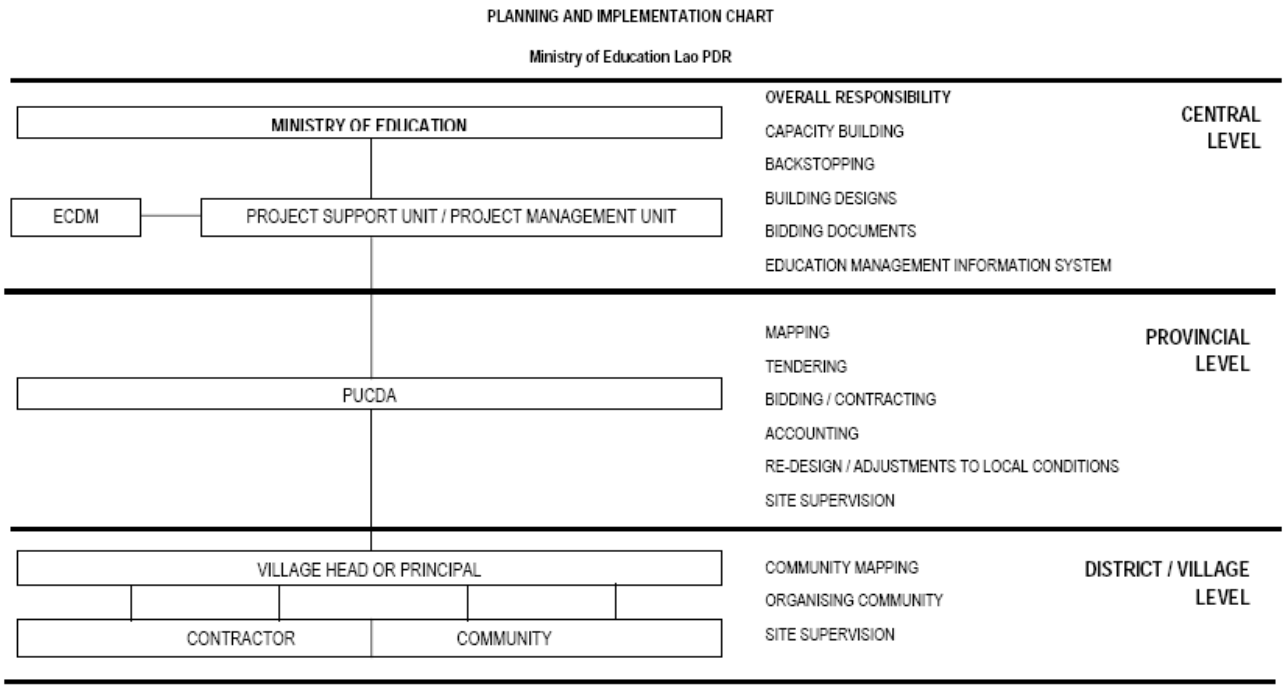
ບາດກ້າວ 4 : ອະນຸມັດໄລຍະ 2 ໂດຍ ກະຊວງສຶກສາທິການ

ບາດກ້າວ 5 : ຈັດການ ປະມູນໂດຍພະແນກສຶກສາທິການແຂວງ

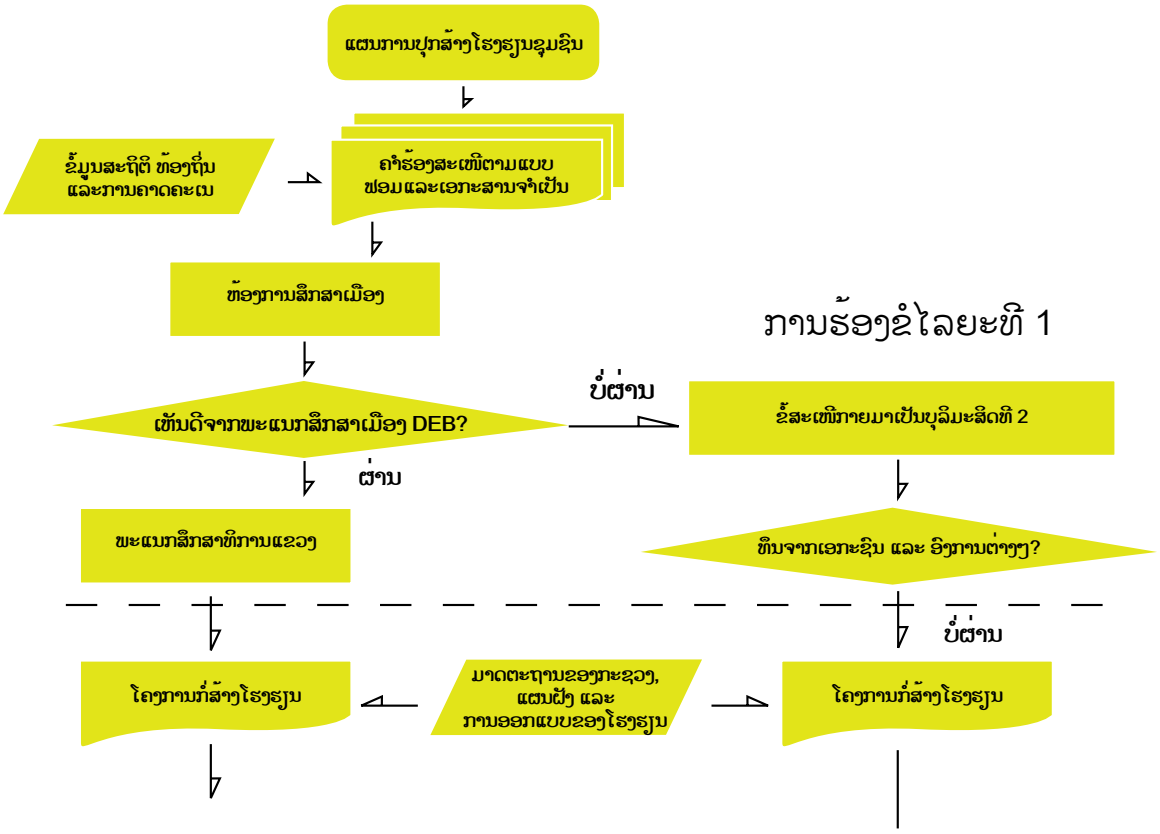
ບາດກ້າວ 6 : ເຮັດສັນຍາ ໂດຍ ພະແນກສຶກສາທິການແຂວງ

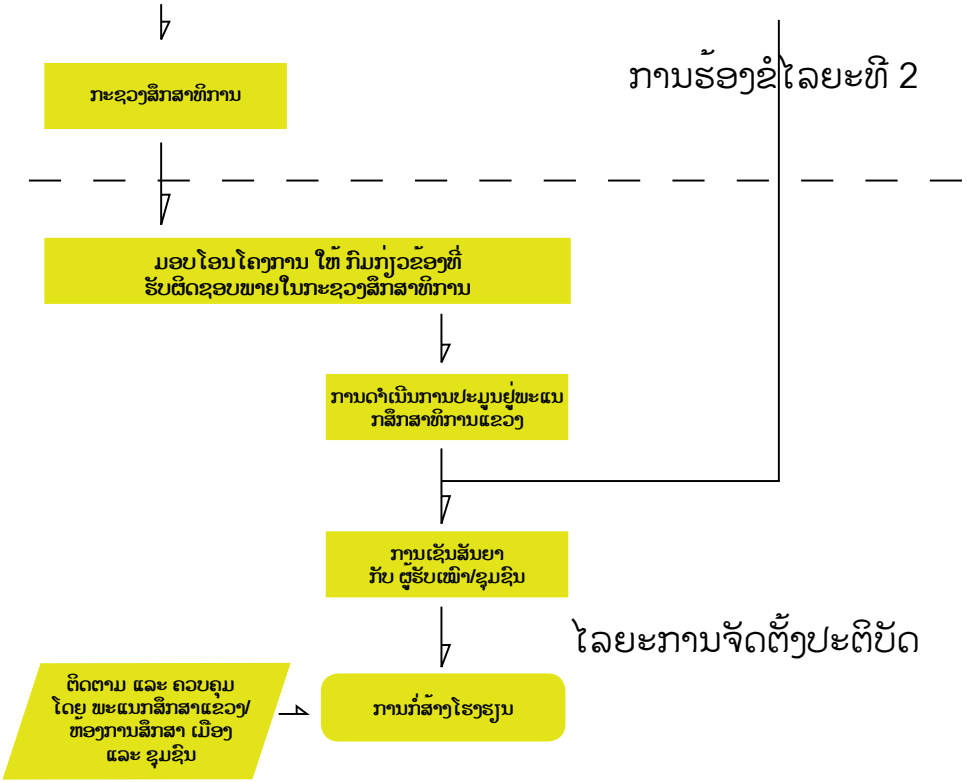
ຂ) ປະຕິບັດ ການກໍ່ສ້າງໂດຍ ບໍລິສັດຮັບເໝົາ/ຊຸມຊົນ, ຕິດຕາມກວດກາໂດຍ ຫ້ອງການສຶກສາທິການເມືອງ ແລະ ພະແນກ ສຶກສາທິການແຂວງ

ໂຄງສ້າງການວາງແຜນ:



ແຜ່ນອາດບາດກ້າວການວາງແຜນ ແລະຈັດຕັ້ງປະຕິບັດ:





5.2 ຂັ້ນຕອນການຍື່ນຄຳຮ້ອງ

ກະຊວງສຶກສາທິການຈະອະນຸມັດແຕ່ ເອກະສານຄຳຮ້ອງທີ່ເຫັນວ່າເປັນໂຄງການກໍ່ສ້າງທີ່ງ່າຍ, ມີປະສິດທິພາບ ແລະ ຄວາມປອດໄພ. ປຶ້ມຄູ່ມືແນະນຳ ກ່ຽວກັບ ການກໍ່ສ້າງໂຮງຮຽນສະບັບນີ້ ເປັນເອກະສານອ້າງອີງພື້ນຖານ ໃນການອະນຸມັດ ຄຳຮ້ອງ.

ໄລຍະທີ1

ຕ້ອງສະເໜີຄຳຮ້ອງຈາກຊຸມຊົນ ຫາພະແນກສຶກສາທິການແຂວງທີ່ຮັບຜິດຊອບເມືອງນັ້ນ, ເອກະສານລວມມີ:

ກ) ສະຖິຕິ ກ່ຽວກັບ ນັກຮຽນ
ຂ) ສະຖິຕິ ກ່ຽວກັບ ຄູອາຈານ
ຄ) ຂໍ້ມູນແລະການຄາດຄະເນການຂະຫຍາຍຕົວຂອງປະຊາກອນ ແລະ ນັກຮຽນ
ງ) ລາຍລະອຽດກ່ຽວກັບສິ່ງອຳນວຍຄວາມສະດວກຂອງໂຮງຮຽນທີ່ມີຢູ່ໃນປັດຈຸບັນ
ຈ) ຂໍ້ມູນຂ່າວສານກ່ຽວກັບແຜນຄວາມຕ້ອງການກ່ຽວກັບຈຳນວນຫ້ອງຮຽນ
ສ) ແຜນທີ່ໂຮງຮຽນ (ປະຕິບັດ ຕາມຄູ່ມືສຳລັບການເຮັດແຜນທີ່ໂຮງຮຽນຂອງ ພະແນກ ຄຸ້ມຄອງ ອອກແບບ ກໍ່ສ້າງ-ສ້ອມແປງ)
ຍ) ໃບຕາດິນ

ແບບຟອມສຳລັບວຽກຂ້າງເທິງມີຢູ່ ທີ່ ພະແນກສຶກສາທິການແຂວງ ແລະພະແນກຄຸ້ມຄອງ ອອກແບບ ກໍ່ສ້າງ-ສ້ອມແປງ ກະຊວງສຶກສາທິການ.

ໄລຍະທີ 2

ກ) ແຜນທີ່ຕາດິນລວມເອົາເຂດທີ່ມີຄວາມສ່ຽງທີ່ຊີ້ບອກສະຖານທີ່ປຸກສ້າງໂຮງຮຽນ (ຕາມກົດລະບຽບທົ່ວໄປຕາມມາດຕາສ່ວນ 1:1000)
ຂ) ແຜນທີ່ເຂດທີ່ມີຄວາມສ່ຽງໄພ
ຄ) ແຜນຜັງພື້ນທີ່ ໂຮງຮຽນ ແລະເດີ່ນ ,ລວມທັງອາຄານທີ່ມີແຜນຈະກໍ່ສ້າງແລະ ອາຄານທີ່ມີຢູ່,ທາງເຂົ້າ ອອກ,
ສິ່ງອຳນວຍຄວາມສະດວກນອກອາຄານ,ຄວາມອາດສາມາດຂະຫຍາຍໃນຕໍ່ໜ້າ.
(ຕາມກົດລະບຽບທົ່ວໄປຕາມມາດຕາສ່ວນ 1: 500)

ງ) ຮູບແຜນຜັງລະອຽດບົ່ງບອກຫ້ອງ,ຂະໜາດຂອງຫ້ອງ,ເຄື່ອງເຟີນີເຈີ, (ຕາມລະບຽບທົ່ວໄປ ຕາມ ມາດຕາສ່ວນ 1:100)

ຈ) ຮູບຕັດ ພ້ອມໝາຍບອກ ກ່ຽວກັບຄວາມສູງຂອງຫ້ອງ (ຕາມກົດລະບຽບທົ່ວໄປມາດຕາສ່ວນ1:100)

ສ) ຮູບດ້ານໜ້າ,ຫລັງ,ຂ້າງ,ລະດັບດິນທຳມະຊາດແລະດິນໃຫມ່ (ຕາມກົດລະບຽບທົ່ວໄປມາດຕາສ່ວນ1:100)

ຊ) ການປະເມີນທາງດ້ານລາຄາ

ຍ) ມາດຕະຖານເຕັກນິກໃນການກໍ່ສ້າງພ້ອມການບົ່ງບອກໂດຍທົ່ວໄປ ກ່ຽວກັບເຕັກໂນໂລຊີ ແລະ ວັດຖຸອຸປະກອນ.

ການປະເມີນຜົນກ່ຽວກັບສິ່ງແວດລ້ອມ

ເມື່ອມີ ໂຄງການສຳລັບການປຸກສ້າງໂຮງຮຽນ ອົງກອນທີ່ຮັບຜິດຊອບ (ຕາມປົກກະຕິແລ້ວ ກໍ່ແມ່ນ ກົມໃດ ນຶ່ງຂອງກະຊວງສຶກສາທິການ) ຕ້ອງໄດ້ກວດຜົນກະທົບດ້ານສິ່ງແວດລ້ອມຂອງ ໂຄງການເພື່ອຍື່ນເອກະສານ ເຖິງ ກົມສິ່ງແວດລ້ອມ ແລະ ປະເມີນຜົນກະທົບທາງສັງຄົມ (DESIA) ເພື່ອອອກໃບຢັ້ງຢືນທາງ ສິ່ງແວດ ລ້ອມ. DESIA ຈະເປັນຜູ້ກຳນົດວ່າຈຳເປັນຕ້ອງດຳເນີນການປະເມີນຜົນ ດ້ານສິ່ງແວດລ້ອມ (EA) ຫຼືບໍ່ນັ້ນ ໂດຍອີງໃສ່ຂະໜາດນ້ອຍໃຫຍ່ຂອງໂຄງການ. ໂດຍທົ່ວໄປແລ້ວ ໂຄງການກໍ່ສ້າງໂຮງຮຽນແມ່ນໄດ້ຮັບການຍົກ ເວັ້ນຈາກການປະເມີນຜົນກະທົບດ້ານດ້ານສິ່ງແວດລ້ອມ (EIA), ເຖິງຢ່າງໃດກໍ່ຕາມ ຖ້າເຫັນວ່າໂຄງການຈະມີ ຜົນກະທົບຕໍ່ ຊັບພະຍາກອນນ້ຳ, ປ່າໄມ້ ແລະ/ຫຼື ມໍລະດົກທາງວັດທະນະທຳ ແລະ ສັງຄົມ, ຂະແໜງທີ່ ກ່ຽວຂ້ອງຂອງ ກົມສິ່ງແວດລ້ອມແລະ ປະເມີນຜົນກະທົບທາງສັງຄົມ ສາມາດສະເໜີອົງການ ທີ່ກ່ຽວຂ້ອງ ໃຫ້ ດຳເນີນ ການປະເມີນຜົນ ດ້ານສິ່ງແວດລ້ອມ (EA) ລວມທັງ ການປະເມີນຜົນກະທົບຕໍ່ສິ່ງແວດລ້ອມເບື້ອງຕົ້ນ (IEE)ແລະ ອາດຈະຕ້ອງດຳເນີນ ການປະເມີນຜົນກະທົບດ້ານສິ່ງແວດລ້ອມ (EIA) ຈຶ່ງຈະຮັບໃບຢັ້ງຢືນທາງ ສິ່ງແວດລ້ອມໄດ້.

ໃນໄລຍະນີ້ບໍ່ຄວນມີການດຳເນີນການກໍ່ສ້າງໃດໆຈົນກວ່າຈະໄດ້ຮັບໃບຢັ້ງຢືນ (xx);

(*ອີງຕາມ ກົດລະບຽບຂອງການປະເມີນສິ່ງແວດລ້ອມ ຢູ່ໃນ ສ.ປ.ປ.ລາວ*)

5.3 ການຈັດຕັ້ງປະຕິບັດ

ພະແນກສຶກສາທິການແຂວງ (PES) ແລະ ຊຸມຊົນເປັນຜູ້ຈັດຕັ້ງປະຕິບັດ ໂຄງການກໍ່ສ້າງໂຮງຮຽນໂດຍກົງ ບໍ່ວ່າຈະເຮັດລະບົບສັນຍາແນວໃດກໍ່ຕາມ. ຜູ້ໃຫ້ການສະໜັບສະໜູນດ້ານ ເຕັກນິກແມ່ນພະແນກອອກແບບກໍ່ສ້າງ-ສ້ອມແປງ (ECDM), ເຊິ່ງມີໜ້າທີ ສະໜອງປຶ້ມຄູ່ມືແນະນຳ, ການພັດທະນາຄວາມສາມາດ, ຈັດຕັ້ງການຝຶກອົບຮົມ ແລະສ້າງ ຄວາມເຂັ້ມແຂງ ໃຫ້ໜ່ວຍກໍ່ສ້າງຂອງ ພະແນກສຶກສາທິການແຂວງ (PUCDA.)

ຫ້ອງການສຶກສາທິການເມືອງ (DEB) ແລະ ຊຸມຊົນ ມີໜ້າທີ່ໃຫ້ການຕິດຕາມ ແລະ ກວດກາການກໍ່ສ້າງ.

(ອີງຕາມ ການປະຕິບັດການປະມູນ, ຄູ່ມືການເຊັນສັນຍາ ແລະ ການຄວບຄຸມກວດກາການກໍ່ສ້າງ ໂດຍ (ECDM) ເບິ່ງໃນພາກສະໜວກ 5: ແບບຟອມ ການຄຸ້ມຄອງ ແລະ ວິທີການ (ແບບຟອມ ນຳໃຊ້ ແລະ ບັນຊີ ລາຍການກວດກາ)

ພາກ 6.

ນະໂຍບາຍກ່ຽວກັບ ການບຳລຸງຮັກສາ ແລະ ການປະຕິບັດວຽກງານ

ການບຳລຸງຮັກສາແບບເປັນປະຈຳ ລັບອາຄານຮຽນໃນ ສປປ ລາວ ຖືວ່າແມ່ນວຽກນ້ອຍ ແລະຄວນ ມອບໃຫ້ ຊຸມຊົນຢູ່ທ້ອງຖິ່ນຮັບຜິດຊອບ.

ແຕ່ລະແຂວງ ຫລື ເມືອງ, ໜ່ວຍງານກໍ່ສ້າງ ຂອງພະແນກສຶກສາທິການແຂວງ(PUCDA), ທີ່ຂຶ້ນ ກັບກະຊວງສຶກສາທິການ(MOE) ຕ້ອງໄດ້ຈັດຊຸດຝຶກອົບຮົມ ກ່ຽວກັບການການບຳລຸງຮັກສາ ໃຫ້ດີ. ຫ້ອງການສຶກສາເມືອງ ຕ້ອງໄດ້ ອະທິບາຍ ຄວາມຕ້ອງການ ໃຫ້ຊຸມຊົນມີ ສ່ວນຮ່ວມ.

6.1 ນະໂຍບາຍໃນການບຳລຸງຮັກສາ

ອຳນາດ ໃນການປະຕິບັດ ນະໂຍບາຍ ແລະ ການບຳລຸງຮັກສາ ແມ່ນຂໍ້ຕົກລົງ ຂອງລັດຖະມົນຕີ ກ່ຽວກັບ ການປົກປັກຮັກສາ ອາຄານ ໂຮງຮຽນປະຖົມສຶກສາ ສະບັບເລກທີ່ 1241/ສສ/ສມ/06, ລົງວັນທີ່ 30.6.2006.

6.2 ຄວາມຮັບຜິດຊອບໃນການບຳລຸງຮັກສາ

ຂັ້ນກະຊວງ: **ຂັ້ນສູນກາງ**

ບົດບາດ: ຮັບຜິດຊອບລວມ, ງົບປະມານ,ກວດກາ,ຕິດຕາມຊີ້ນຳ

ພະແນກສຶກສາທິການແຂວງ: ***(PES):*** **ຂັ້ນແຂວງ**

ບົດບາດ: ກວດກາ / ງົບປະມານຂອງ ແຂວງ / ສະໜັບສະໜູນທາງດ້ານວິຊາການ

ຫ້ອງການສຶກສາທິການເມືອງ: ***(DES):*** **ຂັ້ນເມືອງ**

ບົດບາດ: ກວດກາ / ງົບປະມານຂອງເມືອງ / ການບຳລຸງຮັກສາ ແບບປ່ຽນແປງໃຫ້ຄືນສູ່ສະພາບເດີມ

ບ້ານ, ຄູສອນ: **ຂັ້ນໂຮງຮຽນ**

ບົດບາດ : ບຳລຸງຮັກສາ ແບບປ້ອງກັນ ແລະ ປົກກະຕິ ປະຈຳວັນ/ການລາຍງານ.

6.3 ກິດຈະກຳການບຳລຸງຮັກສາ

a) ***ການບຳລຸງຮັກສາເປັນປະຈຳ ລວມມີ:*** ການນຳໃຊ້ອາຄານຢ່າງຖືກວິທີ, ຮັກສາ ແຕ່ ລະມື້, ປະຈຳອາທິດ, ລວມທັງວຽກງານປັດກວດອານາໄມ, ໃສ່ກະແຈປະຕູ, ກວດກາຮົ້ວ, ເກັບຂີ້ເຫຍື້ອ ແລະ ອື່ນໆແມ່ນວຽກຂອງຊຸມຊົນ.

b) **ການບຳລຸງຮັກສາ ແບບປ້ອງກັນ ລວມມີ:** ຮ່ອງລະບາຍນ້ຳ, ການດູດສ້ວມ, ທາສີຝາໄມ້,... ການບຳລຸງຮັກສາແບບປ້ອງກັນຢ່າງເປັນປະຈຳຈະຊ່ວຍໃຫ້ການເສື່ອມໂຊມຊ້າລົງ

ຊຸມຊົນ

DEB, PUCDA PES, MOE

c) **ການບຳລຸງຮັກສາແບບ ປ່ຽນແປງ ໃຫ້ຄືນສູ່ສະພາບເດີມ ລວມມີ**: ກິດຈະກຳ ທີ່ຕ້ອງປະຕິບັດພາຍຫລັງມີການເປ່ເພເກີດຂຶ້ນ, ຕົວຢ່າງ ການປ່ຽນຊິ້ນສ່ວນທີ່ມີ ຈຸດບົກຜ່ອງ ເຊັ່ນ: ກະເບື້ອງຫລັງຄາ, ກະແຕະ ເພດານ, ກະແຈ, ເຟີນີເຈີ ຊຸດໂຊມ.

ກິດຈະກຳ ໃນການບຳລຸງແລະປົກປັກຮັກສາອາຄານ ໄດ້ກຳນົດໄວ້ໃນ ຄູ່ມືການບຳລຸງແລະປົກປັກຮັກສາ ໂຮງຮຽນ ຂອງກະຊວງສຶກສາທິການພ້ອມດ້ວຍແບບຟອມທີ່ໄດ້ສອດເຂົ້າໃນຄູ່ມື ແນະນຳນີ້. ໃນຄູ່ມື ລວມມີ: **1)** ໂຄງຮ່າງຄວາມຮັບຜິດຊອບ, **2)** ບັນຊີລາຍການທີ່ຕ້ອງກວດກາຢູ່ຂັ້ນສູນກາງ, ຂັ້ນແຂວງ ,ຂັ້ນເມືອງ ແລະ ຂັ້ນໂຮງຮຽນ; **3)** ຄູ່ມື ການຝຶກອົບຮົມ ແລະ **4)** ວຽກງົບປະມານ.

6.4 ງົບປະມານ ວຽກບຳລຸງແລະປົກປັກຮັກສາ.

ພະແນກສຶກສາທິການແຂວງ ຮັບຜິດຊອບງົບປະມານ ວຽກງານບຳລຸງແລະປົກປັກຮັກສາ. ແຫລ່ງ ງົບປະມານທີ່ມີ ຢ່າງພຽງພໍແມ່ນຈຳເປັນທີ່ສຸດໃນການຈັດຕັ້ງປະຕິບັດ ວຽກງານ ການບຳລຸງຮັກສາໃຫ້ສຳເລັດ ຜົນ. ມູນຄ່າ ໃນວຽກນີ້ ຕ້ອງມີເອກະສານ ທີ່ຖືກຕ້ອງເພື່ອ ການວາງແຜນ ໃນການນຳໃຊ້ ງົບປະມານໃນຊຸມປີ ຕໍ່ໜ້າ. ການຝຶກອົບຮົມ ແລະ ການກວດກາ ສະຖານທີ່ຕັ້ງ ຕ້ອງໄດ້ ເອົາເຂົ້າໃນແຜນງົບປະມານ . ສຳລັບ ການບຳລຸງຮັກສາ ແບບປ້ອງກັນແລະ ປົກກະຕິ ປະຈຳວັນໃຫ້ໃຊ້ ແບບຟອມທີ່ມີ ຢູ່ ພະແນກສຶກສາ ທິການແຂວງ, ຫ້ອງການສຶກສາທິການເມືອງ . ສຳລັບການບຳລຸງຮັກສາ **ແບບປົວແປງໃຫ້ຄືນສູ່ສະພາບເດີມ** ແມ່ນ ມີວິທີການສະເພາະ ໂດຍຕ້ອງປະກອບ ແບບຟອມຕ່າງຫາກ ຍ້ອນມີບໍລິສັດ ຫລື ຜູ້ ຮັບເໝົາ ມີ ສ່ວນຮ່ວມ.

(ເບິ່ງໃນ ເອກະສານ ພາກຜະໜວກ 6. ບັນຊີລາຍການວຽກທີ່ຕ້ອງໄດ້ກວດກາໃນການບຳລຸງຮັກສາ).

ພາກ 7.

ບັນທຶກ ແລະ ເອກະສານອ້າງອີງ

(i) On January 15th, 2009 Lao PDR signed the Convention on the Rights of the Persons with Disabilities and ratified it on September 25th of 2009. The Convention mandates inter alia that children with disabilities are not excluded from free and compulsory primary education, or from secondary education.
http://www.un.org/disabilities/

(ii)Brief on National Forests Inventory NFI. Forest Resource Development Service. Lao PDR. FAO

(iii)Extracted from Lao case study "Mainstreaming Disaster Risk Reduction in the Education Sector in Lao PDR.
NDMO, MOE, ECHO, UNDP, ADPC

(iv)Based on the „Child-friendly Schools Manual" Chapter 3. UNICEF. Note that at average children walking speed (about 3 Km/hour) this distance may be equivalent to 1.5 Km. in flat lands and approximately 1 Km. in mountainous areas.

(v)ADB Project. Strengthening Decentralised Education Management. Training Module for Management of school construction and Procurement

(vi)Construction Design, Building Construction and Site Selection. ProVention Consortium Secretariat. www.proventionconsortium.org

(vii)Guidance Notes on safer school construction. Global Facility for Disaster Reduction and Recovery

(viii)Standards for design of classrooms, yard, furniture for Primary Schools, developed by ECDM (Lao language)

(ix)The Building Code of Lao PDR is under preparation by the Ministry of Transport and Public Works, at the time of approval of this guideline,

(x)Including Standards for design of classrooms, yard, furniture for Primary Schools, developed by ECDM (Lao language)

(xi)Standards for design of classrooms, yard, furniture for Primary Schools, developed by ECDM (Lao language)

(xii)Neufert. Architect's Data. 7th Edition

(xiii)Standards for design of classrooms, yard, furniture for Primary Schools, developed by ECDM (Lao language)

(xiv)Including Standards for design of classrooms, yard, furniture for Primary Schools, developed by ECDM (Lao language)

(xv)Extracted from Primary and Secondary forms for education provision. Lao PDR Ministry of Education. http://www.moe.gov.la/index.php?option=com_content&view=article&id=52&Itemid=85&lang=en

(xvi)Education Sector Development Framework. Ministry of Education. Lao PDR

(xvii) Neufert. Architect's Data. 7th Edition.

(xviii)Standards for design of classrooms, yard, furniture for Primary Schools, developed by ECDM (Lao language)

(xix) Education Sector Development Framework. Ministry of Education. Lao PDR

(xx) According to the Regulation on Environment Assessment in the Lao PDR. 2002

Annex 1: Safety Audit Checklist *

ITEM	Yes	No	Recommended action to make safe	Inspected by	Date of Inspection
Roof sheets					
Roof tiles are correctly fastened to purlines with individual fixings for each tile					
Leading edge of roof tiles are fixed with screws					
Roof sheets are correct size and quality					
Solar panels (if existing) are securely anchored to the roof					
Roof Framing					
Correct number of purlines					
Correct structure of roof truss					
Correct number of bolts in roof truss					
Correct size of wood in roof truss					
Adequate anti-termite treatment of roof truss					
Roof truss is adequately secured to columns					
Ceiling					
Ceiling support structure is fixed to roof beams					
Wood of ceiling has adequate anti-termite treatment applied					
Ceiling matting is fixed to ceiling structure					
Building structure					
All columns and beams are intact and not breaking up or crumbling					
Walling					
All walls are secured to columns and foundations, not in danger of falling					
Non-structural Walls and Partitions					
Non structural walls are reinforced vertically and/or horizontally					
They are detailed to allow sliding at the top and movement at the sides					
They are restrained at the top and the sides against falling					
Windows					
Windows have louvres with provisions for excluding the rain during storm conditions					
Windows are secured to the walls, slabs, beams or columns near all corners of each panel					

ITEM	Yes	No	Recommended action to make safe	Inspected by	Date of Inspection
Doors					
The direction of door swing allows for rapid evacuation in case of emergency					
The door frames are secured to the walls, slabs, beams or columns by bolting.					
The tracks of the top and bottom rails are deep enough to prevent the moving doors from being dislodged in severe hurricanes					
Timber doors have a solid core or are made up from solid timber members					
Each door leaf is fixed by hinges or bolts in at least four locations adjacent to all corners					
External works					
Fences and Garden Walls resist lateral forces					
Non-structural Components in earthquake-prone areas					
Electricity					
Emergency generator is adequately secured					
Batteries are securely attached to the battery rack					
Battery rack is cross-braced in both directions					
The battery rack has bolts secured to a concrete pad					
The diesel fuel tank is securely attached to the supports					
The diesel fuel tank supports are cross-braced in both directions					
The diesel fuel tank bracing is attached with anchor bolts secured to a concrete pad					
Fuel lines and pipes are attached with flexible connections					
Fuel lines and pipes are able to accommodate relative movement across joints					
The transformers, Controls, Switchgear are properly attached to the floor or wall					
Bus Ducts and Cables are able to distort at their connections to equipment without rupture					
They are able to accommodate relative movement across joints					
Bus ducts and cables are laterally braced					
Fire Fighting					
Smoke Detectors and Alarms are properly mounted					
The fire control system and fire doors are securely anchored					

ITEM	Yes	No	Recommended action to make safe	Inspected by	Date of Inspection
Fire Extinguishers and Hose-reel Cabinets are securely mounted					
Fire extinguishers are secured with quick-release straps					
The emergency Water Tank is securely anchored to its supports					
The supports of the emergency water tank are braced in both directions					
The supports or braces are anchored to a concrete foundation					
Plumbing					
The water tank is securely anchored to its supports					
The supports are braced in both directions					
Supports or braces are anchored to a concrete foundation					
Water Pipes and Wastewater Pipes are laterally braced at reasonable intervals					
Pipes have flexible connections to boilers and tanks					
Pipe connections can accommodate movement across joints					
"Free" pipe penetrations through walls large enough to for seismic movement					
Air Conditioning					
Chillers, Fans, Blowers, Filters, Air Compressors are securely mounted					
Ducts are laterally braced?					
Ducts can accommodate movement at locations where they cross separation joints					
Ceilings and Lights					
Suspended ceilings have diagonal bracing wires					
For plaster ceilings, the wire mesh or wood lath is securely attached to the structure above					
Light fixtures (*eg* lay-in fluorescent fixtures) have supports independent of the ceiling grid					
Pendant light fixtures have safety restraints (*eg* cables) to limit sway					
Emergency lights are mounted to prevent them falling off shelf supports					
Appendages and Sundries					
Parapets are reinforced and braced					
Veneers and decorative elements have positive anchorage to the building					
Signs and Sculptures are adequately anchored					

ITEM	Yes	No	Recommended action to make safe	Inspected by	Date of Inspection
Movable Equipment					
Radio equipment is restrained from sliding off shelves					
Telephones are placed away from edges of desks and counters					
Elevated loud speakers and CCTV are anchored to the structure					
Vital computer information is backed up regularly and stored off site					
Desktop items are prevented from sliding off tables					
Access floors are braced diagonally					
Storage areas					
Shelving units are anchored to walls					
Shelves are fitted with edge restraints or cords to prevent items from falling					
Heavier items are located on the lower shelves					
Filing cabinet drawers latch securely					
Heavily-loaded racks are braced in both directions					
Fragile or valuable items are restrained from tipping over					
Chemical supplies are secured or stored in "egg crate" containers					
Hazardous Items					
Gas cylinders are tightly secured with chains at top and bottom (or otherwise)					
Chains are anchored to walls					
Chemicals are stored in accordance with manufacturers recommendations					
Furniture					
Heavy potted plants are restrained from falling or located away from people					
Tables and equipment with wheels have locks or other restraints to prevent them rolling unintentionally					

* Includes recommendations from "Vulnerability Assessment of Shelters in the Eastern Caribbean" prepared by Tony Gibbs of Consulting Engineers Partnership Ltd. October 1998

Annex 2: Site Supervision Manual

General remarks:
This Site Supervision manual is structured into three parts:
Part1 Site Supervision Checklist
Part 2: Reference Book
Part 3: Monitoring and Reporting Form
The material presented in this checklist is based on general knowledge and universal practice. It is up to the particular province / district to develop and apply for some particular steps corresponding solutions which are adapted to local practice and circumstances. The PUCDAs are directed to keep a Site Supervision Checklist for each school updated. Whenever site visits are carried out, the supervisor should fill in date and signature. Three implementation steps (1.2, 4.3, 10) are highlighted in Grey. These steps have to be reported to ECS by using the "Monitoring and Reporting Form" (Part 3 of this guide) before construction process is continued.

Part 1: Checklist

No	Item / building part	Activity / to do	responsible unit	Checked: (Date and signature)	Progress Report sent to ECDM by fax √
1		**Preparation Work**			
1.1	Masterplan	Get Site Plan signed by PUCDA, DEB, Village head.	PUCDA		
1.2		**Important: Do not allow the contractor to start preparation- and construction work at site unless the Site Plan is signed and report to PES and ECDM**			Date: …… Sent by: ……
1.3	Preliminaries on site	Prepare the site before construction works can be started	PUCDA DEB Villagers		
1.4	Work program	Elaborate a Working Plan	PUCDA Contractor		
1.5	Fencing	Build a strong Fence and gate all around the compound	Villagers		
1.6	Setting out of building	Approve setting out	PUCDA		
1.7	Setting out of floor level	Appoint floor level together with contractor	PUCDA		

No	Item / building part	Activity / to do	responsible unit	Checked: (Date and signature)	Progress Report sent to ECDM by fax √
2		**Earth Work**			
2.1	Top soil	Removal of top soil, check whether: • The roots and debris are disposed. • The storage of topsoil is separated from excavation material.	DEB/villagers		
2.2	Excavation and backfilling	Check: • foundation and excavation level, • backfilling around footing and building	PUCDA		
3		**Concrete Structure Work**			
3.1	Footings and ground beams	• Make sure that the lean concrete layer of 5 cm thickness is placed before any casting is started • Check casting (measurements, alignments) of footings and beams • Check reinforcement of footings and beams • Check mixing, placing, and compacting of concrete	PUCDA		
3.2	Brick walls under-neath ground beams	Check workmanship (bonding and laying) of masonry walls before plastering	PUCDA		
3.3	Columns	• Make sure that the covering of concrete is min. 2.5 cm • Ensure that the reinforcement at the top of the columns is long enough to fix the roof trusses	PUCDA		
3.4	Slabs	• Make sure that the backfilling underneath the slab is of well compacted sand • Check reinforcement and thickness of slab (at least 10 cm) • Arrange curing of slabs • Remind contractor to introduce joints along walls	PUCDA		

No	Item / building part	Activity / to do	responsible unit	Checked: (Date and signature)	Progress Report sent to ECDM by fax √
4		**Roofing Structure**			
4.1	Woodwork general	• Remind the contractor to supply the timber for the roof structure and the walls in due time • Check type and quality of wood thoroughly (accept only hardwood) • Make sure that the timber is properly stacked at the site and not being exposed to rain and dirt.	PUCDA		
4.2	Sample roof truss	Advice the contractor to execute a "sample roof truss" exactly in line with the respective drawings. This truss has to be carefully checked by the PUCDA engineer together with the site engineer. Special attention has to be paid to: • Quality and type of timber used • Completeness (are all the members existing?) • Sizing of truss members (do all the members have the size as prescribed in the drawing?) • Number and diameter of required bolts • Number and diameter of required nails • Cracks (no cracks allowed) • Fixing of truss on the concrete pillars • Anti termite treatment (is the timber completely coated?)	PUCDA/ Site engineer		
4.3	Roof trusses	• **Important: Do not allow the contractor to continue work on the trusses unless point 4.2 are carefully checked and found absolutely in line with the drawings** • **Report to PES and ECDM**	PUCDA PES	Date: ..... Sent by	

No	Item / building part	Activity / to do	responsible unit	Checked: (Date and signature)	Progress Report sent to ECDM by fax √
4.4	Purlines,	Check the following: • Size • Number of lines at each roof side) • Fixing of purlines on the trusses • Anti termite treatment (is the purline on all the 4 sides completely coated?)	PUCDA		
4.5	Fascia and eave boards	• Are they using hardwood? • Is the thickness of the used boards min 2.5 cm? • Are the boards coated on all the 4 sides with anti termite treatment?	PUCDA		
4.6	Roof covering	If Corrugated Iron sheets are chosen: • Is the sheet min. 0.42 mm thick? • Is it poperly fixed (3 nails on each purline)? • Are there holes in the sheets? • Is the overlap at least 20 cm (length) and 2 valleys (with)? If Fibre Cement Sheets are chosen: • Is "elephant brand" quality supplied? (5mm thick)? • Are original clips and screws used? (2 per sheet)? • Are the original ridge tiles installed?)	PUCDA		

No	Item / building part	Activity / to do	responsible unit	Checked: (Date and signature)	Progress Report sent to ECDM by fax √
5		**Wood Wall Work**			
5.1	Framing	Partition walls: • Check quality and type of wood (accept hardwood only) • Check quality and type of wood (accept hardwood only) • Make sure that the vertical battens on the concrete pillars painted with anti termite treatment prior to fixing! • Is a supporting frame (5 x 5 cm) underneath and above the window introduced?	PUCDA		
5.2	Boarding and battens for external walls	Make sure that all the planks used for any boarding are out of well seasoned hardwood. • Do not accept any gaps between the planks • Are the louvers for the ventilation of the roof inserted? • Is the "secret nailing system" applied? • Are the vertical window battens at sill and lintel on both sides fixed with a horizontal framing plank? • Are the horizontal battens (above windowsill level) nicely jointed (with a half lap joint on the pillars)? • Is the internal boarding in the teachers and the store room installed?	PUCDA		
5.3	Working surface	The working surface is regarded as an additional student table. Make sure that the height is corresponding with the height of the furniture. Check the fixing of the working surface on the concrete pillars and on the supporting frame underneath the window sill.	PUCDA		

No	Item / building part	Activity / to do	responsible unit	Checked: (Date and signature)	Progress Report sent to ECDM by fax √
6		**Ceilings**			
6.1	Bamboo mats	Check quality and size of the mats. Make sure that the mats are: • well seasoned • on both sides coated with anti termite treatment before fixing	PUCDA		
6.2	Sub structure	• Is the substructure made out of hardwood? (size 5 x 5 cm) • Is the substructure coated wit anti termite treatment? (3 coats) • Is the entrance door to the roof installed? • Is the arrangement of the substructure according to plan?	PUCDA		
6.3	Finishing	• Are the fixing battens painted on both sides before nailing? • Is the alignment of the fixing battens acceptable?	PUCDA		
7		**Windows and Doors**			
7.1	Frames	Frames must be fabricated out of well seasoned hardwood. Check. • Size of frames (5 x 15cm) • Fixing of frames to the wall • Accuracy of fixing (horizontally and vertically)	PUCDA		
7.2	Shutters	Door and window shutters should be manufactured in a workshop. To ensure accuracy and uniformity a template should be used. Check: • Type and quality of wood • Finishing of woodwork • Accuracy of fixing of shutters(3 mm space between frame and shutter) • Functioning of shutter	PUCDA		
7.3	Hinges and locks	• Brand of hinges • Fixing with the required number of srews (do not accept nails for fixing of hinges)! • Brand of cylindrical lock • Functioning of lock • Make sure that you have 3 keys from each lock	PUCDA		

No	Item / building part	Activity / to do	responsible unit	Checked: (Date and signature)	Progress Report sent to ECDM by fax √
8		**Painting Works**			
8.1	Material	Distinguish between anti termite treatment and paint. Anti termite treatment is mainly applied for preservation reasons on the structural parts of the building (roof trusses, purlines, etc.) and on parts that are not visible anymore after installation. Painting is mainly applied for esthetical reasons and cleanliness. Ensure that the contractor applies the quality and brand that is described in the bill of quantity.			
8.2	Application	Check that: • The building part to be painted is dry and free from mortar, dirt and dust • Parts of timber construction that are not accessible anymore after fixing e.g. battens that are directly fixed on concrete pillars, are painted on all sides prior to fixing • Paints are applied in 3 coats			
9		**Furniture**			
9.1	General	Furniture should be manufactured in a workshop and not at the site. Wood used for the furniture production has to be well seasoned and of best quality. Furniture should not be supplied to the site before the handing over of the building.			
9.2	Chairs and tables for students and teachers	Check: • Number of tables and chairs supplied • Size of furniture (chairs in two heights for short and tall students) • Workmanship (finishing) acceptable? • Cracks in tables • Varnishing neatly done?			
9.3	Cupboards and shelves	• Workmanship (finishing) acceptable? • Locks and keys handed over to headmaster? • Shelves sturdy and properly fixed?			

10		**Final inspection**			
		Final inspection is done after all the works of the contractor are completed. For each school a Completion Certificate has to be issued by the PUCDA. This document is very important and has to be signed by the headmaster, the DEB- and PUCDA representatives and the contractor. Before the final payment to the contractor is approved and forwarded, the following has to be ensured: • Toilets completed and functioning • Classrooms cleaned • Site cleaned (all surplus materials removed) • Keys of doors and cupboards handed over to the headmaster • **Report to ECDM and PES**	PUCDA / DEB / Head-master / contractor	Date. ..... Sent by:	

1. Masterplan

A Master Plan showing the layout of the school compound has to be established in scale 1: 200. The plan has to contain the following elements:

- new schools;
- existing schools;
- possible extensions of clasroom buildings;
- toilets, type and number (to be located min. 20 m away from the school);
- waterpoint (location and type of watersupply);
- outdoor facilities (Sport fields);
- fencing.

The Masterplan has to be discussed by the PUCDA with the District Education Office and the Village Head. **Start of construction works by the contractor is only allowed once the plan is truly signed by the DEB Director, the Village Head and the PUCDA. A progress report has to be forwarded by the DES to PES and ECDM by fax accordingly (ref. part 1, checklist tem 1.2).**

2. Preliminaries on site

Site engineer: Each construction site must be one person in charge of the work (site engineer). This person is representing the contractor. He needs to have the technical know how and professional ability, as well as a disciplined personal behavior (authority) towards his workers, supervisors and villagers. He is authorized by contractor and supervised by PUCDA.

Construction start: Before the construction of a project starts the following things need to be organized, implemented and checked:

- the involved villagers have to be informed about the ongoing activities, as well as the proposed work program;
- the confirmation that the locally prepared material fulfills the required quality standards,
- if necessary, the accommodations for the skilled labour are prepared;
- the required building material for the first phase (that is not available in the village) is transported to the site.

When the construction of the project has started, the site engineer representing the contractor has to organize and coordinate daily the ongoing work. This is, as mentioned before, a very important part of the construction. The following points have to be checked by him daily:

- organize and supervise the work on the site;
- explain the job to the workers, and make clear the daily target that is expected from them;
- check the work, and if necessary correct it, or adapt it to the situation;
- plan the work for the next day, and inform the workers;
- organize in time the ordering and delivery of the required building materials;
- keep the administration like daily reports, store book, orders for materials and transport up to date, as well as the controlling of material at the site.
-

Material storage: Before any building materials are brought to the construction site the arrangements for proper storing needs to be organized. On a large construction site the required building material should be stored close to the structures where it will be needed to reduce the transportation within the construction site. All these places have to be shown to the villagers, so that when material arrives at the site before the construction crew is present the villagers can show the proper places to store the various materials.

Storage of cement:
In general cement should not be stored over long periods of time (more than two months). Moisture destroys cement, therefore it must be stored dry. If the cement contains lumps it is a clear sign that it has been exposed to moisture. **A storing place with a secure roof and good ventilation is required.** It is recommended to use a separate store room. To avoid rising damp do not store the cement directly on the floor, but for instance on timber pallets. Avoid contact of the cement bags with outer walls and floor. Walls and floors could be a source of moisture. In addition proper ventilation is prevented when the cement bags lay directly on the floor or against a wall. The cement stack should not be more then 10 bags high. The old stock should always be used before the new one. Cement can be expected to lose from its potential strength because of storage time as follows:
~ 20 % after 3 months
~ 30 % after 6 months
~ 40 % after 12 months (1 year)
~ 50 % after 24 months (2 years)
Proper storage, as well as handling with care is very important when working with cement. **If the cement has lumps, the bags are hard, or the quality of cement is doubtful in any way, it should not be used anymore**. Cement with only a few lumps may still contain some quantities which can be used. In this case it should be sieved through a 0.5mm sieve and used for less sophisticated construction work like foundation or lean concrete work.

3. Work planning

Before starting with the construction there should first be a clear understanding of which parts of the school are to be built first and the actual construction procedure. Therefore, a work programme should be developed which includes the phases and sequences of the construction. Such a work programme is normally designed by the site engineer, and subsequently discussed and agreed upon with the PUCDA / DEB and villagers concerned.

The advantages of a work program are:
- to know the amount of time needed for construction;
- to know the required material needed, as well as at what time it has to be at the site;
- to optimize the work procedures;
- to plan for the following school.

4. Setting out of buildings

Permanent buildings require an exact setting out. According to the measurement on the site plan the building is set out with batter boards. The following steps should be taken for the construction of batter boards:

1. Install batter boards at all corners, approx. 1.5 m away from the proposed outside wall of the building. Use poles of approx. 12 cm diameter, and planks of about 4 cm thickness.
2. Make sure that all batter boards are approx. at the same level using the water hose leveling method
3. Mark the outer wall using strong thread line and tape measurement. Tighten the layout, thread by stones.
4. Check that the layout thread lines are in right angle. Use the 3 : 4 : 5 string or wooden square.
5. Check the diagonal, (to be of equal length) for perfect layout.
6. Mark the building lines on slopped terrain with the help of the plump line.

Remark:
The procedure described above is one possible method for setting out for school buildings. For toilets it is not necessary to use stakes and boards. The required accuracy can be achieved with spirit level and plump. When the setting out is made it is important to build a durable strong batter board construction which can stand and remain stable throughout the construction time.

1. Setting out of levels (fixing of floor level)

The levels on a construction site are related to fix points, where the level is known. Therefore, a temporary bench mark should be set next to each structure. This bench mark has to be surveyed by the engineer or technician in charge. The specified level of the structure can be found by using a straightedge and spirit level.
Important: Make sure that the floor level of the classrooms is fixed minimum 30 cm above ground level

2. Excavation and Backfilling

Choosing sites for proposed schools requires careful consideration in regard to the soil bearing capacity. Therefore the choosing of the location is of greatest importance, before any earth work is undertaken. Another important point is to avoid as much as possible damage to the surrounding nature, like the unnecessary cutting of trees and subsequent creation of erosion problems due to large disturbance of the overgrowth. If possible no excavation should be foreseen in rocky areas, because it is extremely difficult and labor intensive. Special attention is also necessary to guarantee the security of laborers working on deep excavations for wells and deep trenches in rocky areas.

Trenches not deeper than 1.2 meters can be excavated normally with vertical walls, as collapsing of the walls at this depth should not be dangerous for the working person inside the excavation. Trenches or excavations of more than 1.2 meters depth require a careful consideration of the soil stability on which the necessary "safe slope" depends. Special attention is required near houses, rivers or roads to prevent sliding of large areas.

Make sure that no water may enter the excavation area, as wet soil can not be used for a foundation bed. This can also occur when rainwater softens the foundation bed, therefore it is recommended to excavate the last 10cm just before the foundation is cast. For the safety of workers, villagers, and animals, a deep well excavation should be fenced during construction. The backfilling has to be done in layers of about 30cm that are properly compacted.

General rules for foundation construction:

- The soil of the foundation bed must be uniform. If not so, it is better to shift the building to a place where the ground is uniform;
- The foundation bed must always be leveled;
- On steep hills the leveling is achieved by means of steps;
- The depth of the foundation below the ground depends on the nature of the ground. Topsoil like humus always has to be removed.
- Erosion of the foundation has to be carefully considered and precautionary measures have to be foreseen to drain the rainwater around the school building;
- All the loose material which may fall into the foundation has to be secured or removed before casting the foundation;
- If the excavation is dug too deeply, don't fill in soil to save concrete, use lean concrete or compacted gravel;
- If the excavation is finished, the foundation should be built as quickly as possible, especially during the rainy season (to prevent swelling of the ground due to rain water).

3. Concrete work

Concrete means a mixture of cement, water, fine and coarse aggregates (sand and gravel). The quality of concrete depends on the requirements being maintained for the aggregate. Additionally important are mixing, water cement ratio, transporting, placing and compacting as well as curing.

Aggregates:
Sand and gravel need to be clean. If there is too much sand or silt the surface of the aggregates is increased and the cement has to bind this larger surface together. Therefore, with too much sand or silt more cement is required or the strength of the concrete is reduced. Too much gravel causes spaces inside the concrete, the workability is reduced, and proper compacting is not possible. If possible use coarse grained sand and never the fine sieved sand used for masonry work. Remainders of coarse sand from sieved masonry sand can be added to the aggregates when mixed with coarse grained sand.

Too much sand: Enlarges the surface and therefore causes porosity, resulting in reduced compressive strength and density (not waterproof).
Too much gravel: Causes large spaces and therefore reduces the compressive strength and density (not waterproof).
Water-cement ratio: Only half of the water in the mixture is required for the chemical reaction. The rest will remain or evaporate gradually as the concrete hardens, leaving small holes. Not surprisingly holes weaken the concrete and so the more excess water there is in a mixture, the weaker will be the concrete.
The best results for strength and density are achieved by using a stiff plastic mixture with a water-cement ratio of 0.5 (1:2) or less.

Hand Mixing:
Hand mixing does not require much equipment, but a lot of man power. A batch to be hand mixed should not be larger than about 0.5 m3. Concrete should never be mixed on soil because of the proved danger of contamination by organic matters. A leveled platform has to be prepared to prevent water or fluid material from flowing out of the mixture. The following points must be kept in mind when hand mixed concrete is foreseen:

- Concrete should always be mixed on a level and clean platform, which is sprinkled with water before mixing starts. Suitable platforms are: Concrete slabs / rock / moulds / or iron sheets. It is recommended that for a large construction site perhaps a concrete slab should be made
- Spread the first layer (sand) and the second layer (stones) on the platform, and then spread the cement on top.
- Mix the material dry until there is a uniform appearance. Therefore, at least three times of mixing necessary.
- The material is then shoveled into a flat heap with a hollow in the centre into which about half the required water is poured.
- Then the final step of the mixing procedure starts by shoveling the material from the edges to the centre, emptying each full shovel and then turning it over again. Add water as necessary to obtain required consistency as the material is turned over again.

Setting time can start half an hour after pouring water into the mixture. Therefore, do not mix more than 0.5 m3 at once (10 wheelbarrows). If the concrete mixture is disturbed during setting time (if setting time has already started before the concrete is put in place and rammed or vibrated) it will cause loss of strength.

Machine Mixing:
There are a variety of mixing machines available. It is important to maintain these machines daily (including cleaning). Before the aggregates are put into the drum, the drum has to be sprinkled with water. The batch is to first mix dry, and after about 45 seconds the water should be poured in. The mixing procedure continues for about another 45 seconds. Mixing more than about 1 and a half minutes does not improve the quality of the concrete, but is a waste of energy.

Placing and casting:
Before any concrete is placed, the form work needs to be checked for cleanliness, strength, tightness and alignment. It is essential to keep the form work wet and sprinkle with water before the casting starts. If the form work is not sprinkled the boards will absorb a large amount of water. This will negatively influence the chemical reaction during setting and cause a rough surface and a reduction in strength. **The concrete should be placed in layers. Each layer must be compacted before the next one is put down.** The following layer should be put down before the setting of the previous one has started.
Compacting:
After concrete is placed it contains entrapped air in the form of voids. The object of compacting is to get rid of as much as possible of this entrapped air. Voids reduce strength, waterproofness, and proper binding to the reinforcement. Insufficient compacting is visible on the concrete surface by the presence of large numbers of air bubbles and rock pockets. Compacting can be done by hand or with a vibrator. The vibrator should be operated by skilled people. The needle of the vibrator should not be brought too close to the formwork or the reinforcement, to avoid vibration on the formwork or reinforcement. The vibration can cause holes and therefore weaken the structure**. Any reinforced concrete has to be vibrated with a vibrator.**
Curing:
Curing is necessary to provide sufficient moisture to enable the process of cement hydration**. Direct exposure of freshly placed concrete to sun and rain has to be avoided. Curing should be started at the very beginning of setting.** The longer the period of curing, the better the quality of concrete. Therefore the minimum period of curing should be at least 7 to

14 days, depending also on the weather influences. Methods of curing are sprinkling or flooding of water, covering with sand, or empty cement bags or plastic sheets.

Reinforcement:

There are two main categories of reinforcement by steel. The main reinforcement to take over the tension and the distribution reinforcement to spread the loads and to keep the main reinforcement in position during casting. The main reinforcement should always be at the site where tension occurs. It should not be closer than 3.0 cm to the shuttering or the top, to avoid corrosion of the reinforcement. Steel bars of plain surface (mild steel) need to be hooked at the ends to obtain better adhesion, and therefore create a greater strength for the structure. Hooking is not necessary for steel bars with ripped surface (Thor steel).

A proper bond between the steel rods and the concrete is the most important supposition for reinforced concrete. **The surface of the rod has to be clean and not to rusty. In order to provide a proper bond the rods have to be surrounded completely by the concrete. The reinforced concrete has to be vibrated with a vibrator.** Plain bars must have ends with hooks which should be anchored in the pressure zone. Deformed bars with ripped projections can have straight ends but then the anchorage has to be in the pressure zone of the structure. If rods have to be overlapped the following rules show the minimum overlap length:

rod with hook: 45 times diameter of the rod

straight: 65 times diameter of the rod can be extended by using plastic or metal sheets.

4. Brick walls

The rules required for construction in brick masonry work are:

- Lay out exactly the proposed structure by marking the external side of the walls on the foundation;
- Clean the foundation with a steel brush, wet it properly, if necessary rough it by chiselling;
- For testing purpose lay the first two courses without mortar to check that the correct bond is achieved;
- Burned bricks are soaked in water for 1minute before using them. This is important so that the water of the mortar is not soaked away by the bricks or blocks, which would reduce quality and strength. If the brick is not clean, it will reduce the strength of binding with the mortar, as well as producing cracks caused by swelling and shrinking;
- Check every brick for its brittleness (sound test) before using it for construction;
- Lay the corners exactly with mortar and stretch a line from one corner to the other. There after build the first course in between these marked lines;
- In order that all courses have the same height, use a baton (straight edge) marking all courses on it.

Bonding:

The building procedure for bricks or blocks is the same. Bricks and blocks must be bonded to give maximum strength and adequate distribution of loads over the wall. **Only buildings with bonded walls guarantee that the building is safe for the assigned purpose, and will not collapse during the construction.** The term bonding means the arrangements of bricks in which no vertical joint of one course is exactly over the one below. That means the brick is laid in such a way that it overlaps and breaks the joint below. The amount of lap is generally half of the length of a brick. The minimum lap is 1/4 of the length of a brick. Unbounded or insufficient bonding produces vertical joints with the accompanying risk of failure as shown below. Bonded walls provide stability and resistance to the side thrust, as seen in the figure above. The bond can be selected to give an attractive appearance to the wall face.

For horizontal joints (mortar bed) the thickness of 12mm is recommended for brick work to ensure:

- levelling of the mortar bed
- placing of bricks completely in mortar
- no uneven or incomplete support of the bricks due to stones in the mortar

If the horizontal joints are too thick (more then 12mm) it is a waste of expensive mortar (cement), as well as a weakening of the structure, because the joints are the weakest part of the masonry structure.

For vertical joints (buttering) a thickness of 10mm is recommended for brick work because of the reasons in the list mentioned above. The reduction of 2mm to the horizontal joints is possible because the contact area is much smaller at the side than at the bottom.

5. Topping on slabs

Topping is a cement mortar in a stiff consistency. It is applied mostly as a coat on floors, slabs, walls etc. to protect, give level, and cleanliness to the surface. **The best connection to concrete slabs is achieved if stiff topping is floated on concrete which has just started to set.** This is the so- called "wet" into wet method" and should be used whenever possible. The application of topping on old concrete requires more work steps: chiseling and cleaning of surface, and watering and curing before and after topping. When additional cement paste is required, apply the cement paste immediately after screeching and floating the topping.

6. Timber

Timber categories:
Timber for building construction can be divided into two or more categories according to the mechanical strength. Often one distinguishes between hardwood and softwood. Hardwoods are generally slow-grown, aesthetically appealing with considerable natural resistance to biological attack, moisture, movement and distortion. **For roofing structures, pillars and wall boarding's, doors and windows allow the use of hardwood only.** Softwoods are mainly fast-grown species with low natural durability, however, with appropriate seasoning and preservative treatment, their physical properties and durability can be greatly improved. With the rising costs and diminishing supplies of primary timbers, the importance of using softwoods rapidly increasing.

High quality boards are used for heavily stressed structural members, e.g. purlins and in trusses. Low quality boards are used for temporary constructions such as castings, scaffoldings, wall plates etc.

Selection of timber:
For structural members which are under high stress, such as purlins and rafters and in trusses, the selection of timber is of great importance. **Timber with cracks, knots or with grains that are not longitudinal should not be used**. Such timber should only be used in situations with reduced stress, such as wall plates.

Cracks:
During harvesting and transport cracks may occur. **Such timber should be rejected.** Cracks may also occur due to shrinkage which is unavoidable. Such timber should be tolerated to a certain extent, but not used for heavily stressed parts of the structure. Hidden cracks are also possible but very difficult to detect. This risk is considered within the safety factor in the sizing calculations. **The strength of beams can be greatly reduced by knots,** especially when located in the area of the greatest bending moment and in situations with tensile stress. For example, a knot in the upper third of the beam height situated between the supporting points, reduces the strength of the beam by up to 35%. If the knot is situated at the lower side of the beam, the reduction is even up to 56%.

Seasoning:
Prior to the manufacturing of timber components the timber has to be properly seasoned. One reason is that during drying timber shrinks. The shrinkage varies according to the direction of the grain: radial shrinkage is about 8% from the green to the dry state; the tangential shrinkage is about 14 to 16%; in the longitudinal direction shrinkage can be neglected (0.1 to 0.2%). The use of unseasoned timber results in cracks and warping parts.
Stacking: Stacking timber is done in such that air can pass around every piece. **Protection from rain and avoidance of contact with the ground are essential.** The ground usually contains moisture that rises along any hygroscopic material such as timber that is in direct contact with it. It also harbors different kinds of insects such as termites that can quickly destroy timber. **Timber must therefore not come into contact with the ground.**

7. Erection of roof structure

Laying of trusses and bracing
Trusses should be assembled in a workshop or at the site on the ground. The ground must be perfectly even. The classroom floors are excellent for this purpose. To ensure accuracy and uniformity a template should be used. If the roof is not erected

immediately, trusses must be stored in a dry and shady place. The trusses are erected by first hanging them upside down across the span of the building. Then they are turned over and fixed with temporary bracing. Next the trusses are mounted on bearing pieces and brought into line and levelled with the help of strings and a spirit level or a theodolite. Where necessary they are wedged at the supporting points. They are then secured at the bottom with anchor rods and the permanent bracing.

8. Preservative treatment

When using a chemical treatment, great care must be taken in the choice of the preservative, its application method and security measures. No chemical preservative should be used without the full knowledge of its composition. Those containing DDT (dichlor-diphenyl-trichlorethane), PCP (pentachlorphenol), lindane (gamma-hexa-chloro-cyclohexane), arsenic, quicksilver, lead, fluorine and cadmium **should be avoided**. Research on non-poisonous preservatives is still underway and full clarity on the toxicity of the recommended and currently available chemicals has not yet been attained. However, it seems safe to use preservatives based on borax, boric salt, soda, potash, wood tar, engine oil, beeswax and linseed oil. Their resistance to biological agents is less than that of the poisonous chemicals mentioned above, but can be equally effective in conjunction with a good building design. There are several methods of applying chemical treatment to timber. Some examples are: Brushing, Pump-spraying, Immersing in a preservative solution**. Before applying any treatment of paint, timber has to be dry, free of dirt, mortar and dust. Building parts that are not accessible anymore after installation, have to be treated prior to fixing on all sides.**

Part3: Monitoring and Reporting Form

PROJECT: .....

DONOR: .....

Project Information

Project data		Milestones	Date planned	Date achieved
Province:		Contract signed.		
District:		Start of construction:		
Village:		Foundations completed:		
School Code:		Roof up:		
Type of school:	☐2 Clr. ☐ 3 Clr. ☐5 Clr	Walls completed:		
Stage:		Ceilings completed:		
Contractor's name:		Furniture delivered:		
Origin of contractor:		Sanitation completed:		
Contract number:		Completion expected:		
Costs:		Warranty settled:		

Compulsary Site Inspections by PUCDA and EDB

No	Inspected item	Date	DEB representative		PUCDA representative		Forwarded to ECDM by fax on:
			Name	Signature	Name	Signature	
1*	Masterplan signed / Contract signed						
2	Setting out checked / Construction started						
3	Reinforcement of ground beams checked						
4	Castings of pillars checked						
5*	Sample roof truss erected and approved						
6	Flooring works approved						
7	Wall woodwork checked (incl. treatment)						
8	Ceiling inspected (incl. termite treatment)						
9	Furniture checked and approved						
10*	Final inspection carried out						

* to be reported to ECDM by using this reporting sheet

Part4: Final Inspection Form

1 PROJECT INFORMATION

Project data		Representatives	
Province:		PES (PUCDA Engineer):	
District:		DEB (District Engineer):	
Village:		Village (Village Head):	
School Code:		Supervisior in-charge:	
Type of school:	☐2 Clr. ☐ 3 Clr. ☐5 Clr	Contractor/Community:	
Stage:		Costs:	US$
Company's name (if any):		Contract number:	

2 INSPECTION AFTER COMPLETION

☐ of civil works (classroom construction and toilet)
- ☐ no faults
- ☐ minor faults (minutes required)
- ☐ major faults (minutes required)

☐ of furniture supply
- ☐ no faults
- ☐ minor faults (minutes required)
- ☐ major faults (minutes required)

☐ of water supply
- ☐ no faults
- ☐ minor faults (minutes required)
- ☐ major faults (minutes required)§

ref. section 3.5 *Approval*, section 3.6 *Approval with minor faults*, section 3.7 *Refusal*, and Tender Documents Section II chapter 6.2 *General Conditions of Contract*

2.1 The final inspection was:

☐ carried out
☐ documented by the attached inspection minutes (compulsory in cases of minor and major faults)
☐ not carried out
☐ The functioning of the toilet and the water supply has been checked by putting it into operation

---

2.2 Acceptance:

☐ "The Works" or "The Goods" do not show any faults and are accepted
☐ "The Works" or "The Goods" are accepted, but require the removal of **minor faults**. These faults shall be corrected before: date: dd ..... mm ..... yy .....
☐ "The Works" or "The Goods" are not acceptable since they show **major faults**. The security of users is not ensured. A further inspection/meeting with representatives of the MoE is required.

2.3 Signatures for Final Inspection:

The representatives listed below verify that the final inspection was carried out according to the overleaf instructions and the "General Conditions of Contract"

Place: ..... Date: dd ..... mm ..... yy.....

PES (PUCDA Engineer): ..... Construction Supervision Firm: (if any).....

DEB (District Engineer): ..... Contractor/ Community Representative: ....

Village Head: .....

2.4 Signatures for Post Final Inspection:

Post Final Inspection after correction of minor faults as specified in the minutes of the Final Inspection was carried out. "The Works" or "The Goods" are now regarded as completed:

Place: ..... Date: dd ..... mm ..... yy.....

PES (PUCDA Engineer): ..... Construction Supervision Firm: .....

DEB (District Engineer): ..... Contractor/Community Representative: .....

Village Head: .....

3 ACCEPTANCE OF WORKS OR GOODS

3.1 Significance of acceptance:
With the acceptance the works are considered completed or the furniture is considered supplied. They are placed into the care of the owner. The warranty period starts.

3.2 Announcement of completion:
After completion of the works or the delivery of the furniture, the contractor is to submit a written request for the final inspection.

3.3 Final Inspection:
Following the request placed by the contactor, the final inspection has to be carried out. The finals inspection team consists from official representatives of: PUCDA, DEB, Village Authorities, Site Supervision Firm and Contractor.

3.4 Final Inspection Protocol:
The results of the final inspection are laid down in a detailed protocol, signed by all members of the inspection team. This protocol should be submitted to the MoE together with the Final Inspection Form

3.5 Approval:
If the final inspection does not show faults, the works/furniture are regarded as accepted with the signing of the section 2.4 (Signatures for Final Inspection) by all inspection team members . The form shall be submitted to the MoE immediately after signing.

3.6 Approval with minor faults:
If the final inspection shows minor faults, the works/ furniture can be accepted provided the contractor agrees to correct the faults within one month. The minor faults shall be listed up in the minutes of the Final Inspection. After one month, the Final Inspection Team shall carry out a *Post Final Inspection*. If by then the faults are corrected, the works are regarded as accepted by signing the section 2.5 (Signatures for Post Final Inspection) The form shall be submitted to the MoE immediately after signing.

Examples of minor faults:

a) incomplete anti-termite treatment
b) surface of concrete slab flaking off
c) doors and windows of insufficient quality
d) items of furniture with cracks that necessitate replacement
e) incorrect numbers of furniture items

3.7 Refusal
If the works/furniture show major faults, they cannot be accepted.
Major faults are faults that cannot be repaired. The works/goods need to be replaced. The security of users is not ensured.
Examples of major faults:

a) the works are incomplete
b) structural parts of the building such as foundation, columns, roof trusses, roof covering, etc.do not conform to drawings and/or specifications
b) wrong materials are used, e.g. softwood instead of hardwood for walls and roof, etc.
c) insufficient quality of walls and ceiling
d) incorrect reinforcement of R.C.C. parts

3.8 Compulsory checks at Final Inspection

a) **Water supply:** well functioning and executed according to plans

b) **Toilets:** functioning, location at least min. 20m away from the school building, septic tank correctly placed, ventilation pipe installed, internal water tank installed.

c) **Classroom construction:** (Quality of workmanship equivalent to the selected model schools)
Concrete and masonry work: Concrete slab done in one go. Columns and walls nicely plastered.
Roof structure and ceiling: Roof trusses from local hardwood, executed exactly according to plan. Anti- termite treatment applied in three coats. Brand and type of roofing material as specified in the Bill of Quantities and the Specifications. Loft inspection hatch in ceiling of teacher's room fitted.
Wood walling work: Executed according to plan. All wood selected from local hardwood. Number and size of supports OK. Working surface and battens for movable blackboards installed. Brand, type and application of Anti-termite treatment as specified in the Bill of quantities (three coats).
Doors and windows: Brand and type of hinges and locks as specified. Keys handed over to the head master.
Painting works: Brand and color of paints according to Bill of Quantities. Application of three coats verified.

d) **Yard:** Surplus construction materials disposed and remaining topsoil distributed. Roof water drain around building done.

Annex 3: Excreta Disposal Without Water Carriage

Excreta Disposal Without Water Carriage[1]

While disposal with water is desirable, it is not practical under many conditions. It is possible; however, to dispose of body wastes in such a manner that danger of carriage of disease from the excreta by surface washings, soil and water pollution, fowls, animals, and flies will be eliminated or minimized.

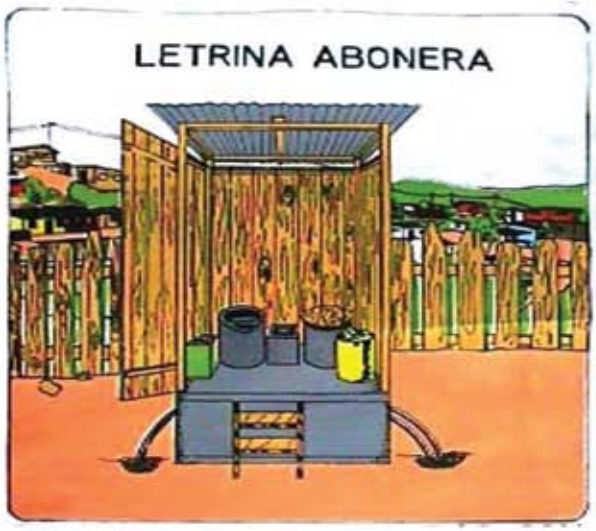
Pit Privy: The pit privy consists of a hole dug in the ground over which the toilet seat is placed and in which the excreta are deposited and dried out, provided the pit is above the ground-water level and that flooding, surface washings and rain are excluded. This type of disposal is not suitable for flood-prone areas.

The "improved" pit privy consists of concrete for slab and riser. A four inch vent is used from the riser to above the roof. Pit privies require little maintenance. The ventilation should keep the pit materials dry and small in bulk, consequently a pit should serve for 10 years or more, particularly if toilet paper is used, and no garbage or other refuse is thrown in. Water should be prevented from entering so far as possible, and mosquito breeding can be a problem. Screening the ventilator and keeping the seat cover down can discourage mosquito breeding. Disinfectants should not be used in the pit. Addition of ash or lime can help keep the contents dry.

Vault Toilet: Devised to prevent the possibility of pollution of soil and ground water, the vault toilet consists of a watertight concrete vault over which the seat and house are placed. There is a cleaning door on top of the vault. The vault is vented through the roof. The vault contents will become liquid rather than dry. As a rule the cleaning door and the seats are not well maintained, resulting in proliferation of flies that are potential disease vectors. The vaults must be periodically emptied, which can be a dangerous nuisance, especially if they overflow.

Composting Toilet: The composting toilet is a variation of the vault toilet, however, a separate provision must be made for urine disposal. Details from a World Bank project in water supply and sanitation are shown below.

[1] Extracted from the Environmental Management Plan. Education Sector Support Scale Up Action Program (ESSSUAP). World Bank. Cambodia 2009.



Features: Raised level base with access steps
Two chambers to alternate usage with composting
Chambers must be maintained completely dry, so urine must be separated from feces in toilet bowl
Users must add frequent layers of ash to dry feces
When chamber is full, left to compost for > 6 months

Conditions: Must be used in flood-free areas
Requires training for entire family
Requires significant labor input (stirring contents, rotating chambers)
Preferably for areas where there is a need for cheap compost

Benefits: Reduced odor and fly problems
Free source of organic compost
Long life if well-maintained
Separated urine can be captured and used as insecticide

Problems: High maintenance required (to stir and mix ash frequently)
Urine separation impractical/unacceptable (especially women)
Inadequate composting can present serious health hazard
Liquids can destroy the 'dry composting' process[2]

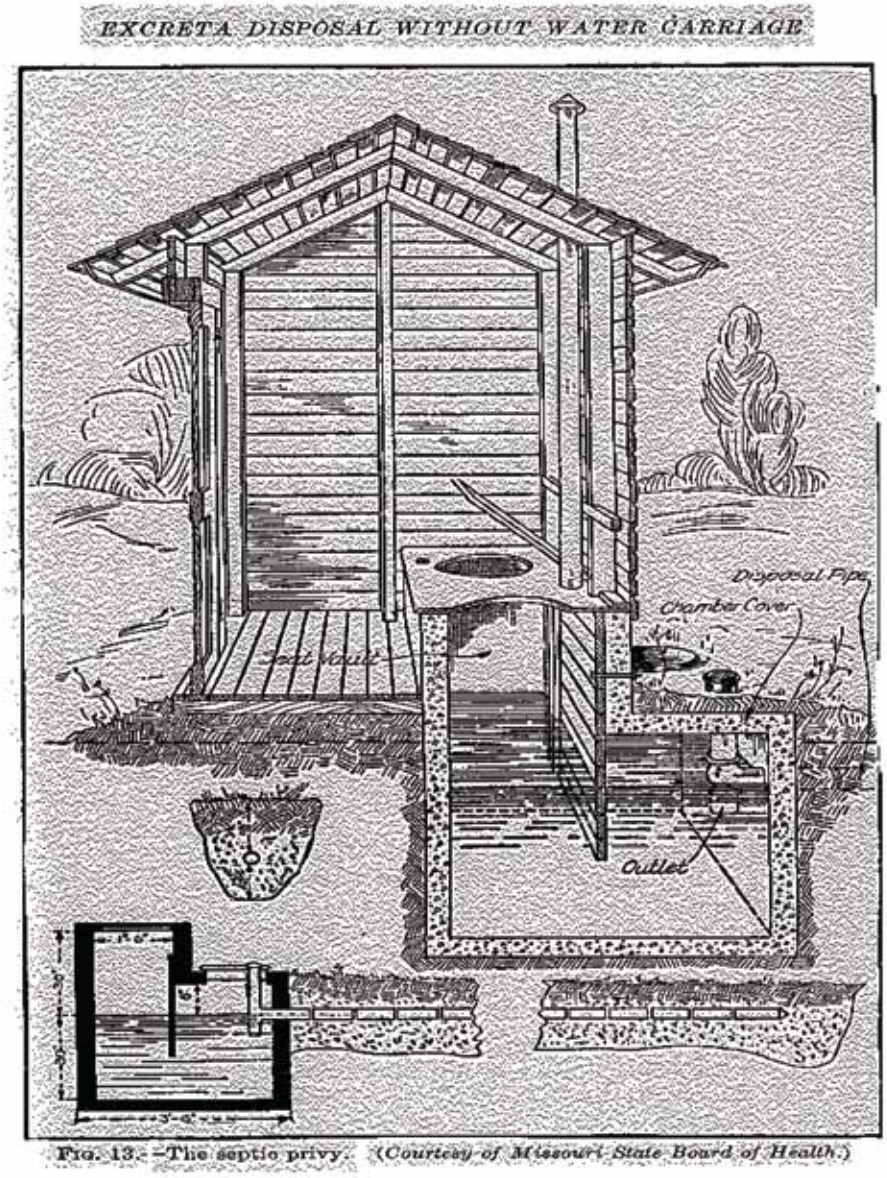
Septic Privy: There are variations of this concept, which are a bucket flushed toilet fixture connected to a septic tank via a 4 inch PVC pipe (a water carriage system discussed below), or the earlier version, which was a privy seat located directly above a septic tank. Only small amounts of water are required to maintain the older version of the septic toilet, since water is not used to carry the excreta to the septic tank.

In the older version, small amounts of water are added to aid the digestion process. The tank is constructed of concrete with a capacity of 26 cubic feet (200 gallons), for 5 people. For each additional person an extra 3 cubic feet of capacity is added. The tank overflows to a filter, such

[2] Source: Steve Maber, Water for Sanitation and Health Project, World Bank

as a leachfield (discussed below). A baffle is placed within the tank to prevent travel of waste directly from the place of deposit to the outlet. The digestion is anaerobic, so the tank should be vented through a stack so odorous gases can escape.

Maintenance of the older version is simple but absolutely necessary to ensure proper operation. When first constructed the tank should be filled with water. Two buckets of water should be added to the tank daily (5-person size), or serious clogging will result. Use of newspaper will also cause clogging, only toilet paper should be used. No disinfectants can be added to the tank, since they will kill the bacteria digesting the waste. Sludge must be bailed or pumped out after several years of operation. A heavy scum may form on the surface of the tank contents upon which feces may accumulate, with consequent production of odors. This scum layer must be thoroughly broken up. Flies must be excluded from the tank by tight covers, and mosquitoes may breed in the tank and must be controlled.



The Septic Privy: Note This System Does Not Use Water to Flush.

Annex 4: Flood and Wind data for Lao PDR

Maxi Wind Velocity in 24 Hours (m/s)

dd=Direction ff=Speed

Station Name	Jan		Feb		Mar		Apr		May		Jun		July		Aug		Sept		Oct		Nov		Dec	
	dd	ff	dd	ff	dd	ff	dd	ff	dd	ff	dd	ff	dd	ff	dd	ff	dd	ff	dd	ff	dd	ff	dd	ff
Vientiane Cap	E	10	W	35	SE	30	N	49	WSW	30	SW	30	SSE	30	NW	30	NW	25	NW	20	N	15	E	28
Phongsaly	S	10	S	9	W	12	S	9	W	12	S	9	E	11	E	10	E	12	SE	9	SW	10	SE	10
Bokeo	SW	9	NW	19	SW	15	WSW	18	NE	25	WSW	19	SW	10	ENE	17	ENE	19	ENE	11	NE	8	NE	8
Luangnamtha	SE	22	SW	16	S	17	N	15	W	18	S	16	S	15	E	15	N	12	E	13	NE	10	NNW	15
Oudomxai	NE	6	W	13	W	12	W	13	W	8	S	10	W	10	W	10	N	5	S	10	N	10	N	10
Luangprabang	W	15	SW	30	E	28	SW	29	SW	30	W	27	WSW	24	W	32	E	30	N	15	SE	14		15
Xamneua	E	12	E	12	W	14	SW	15	E	15	W	15	W	20	E	13	E	10	E	10	E	9	E	8
Xayabouly	NE	8	W	20	NW	20	SW	28	S	22	SW	20	W	15	N	14	N	18	S	11	NE	7	N	10
Xiengkhouang	SW	20	NW	25	W	20	N	28	S	30	NW	27	SE	23	E	19	NE	21	NE	25	E	20	ENE	18
Phonhong	S	8	W	9	S	17	SE	25	S	17	W	8	N	15	NW	10	E	24	S	11	SSW	5	SSW	6
Paksane	N	6	NE	6	N	5	NE	8	E	11	S	6	S	8	W	8	E	6	NE	7	NE	8	NNE	7
Thakhek	E	10	E	14	W	16	S	16	W	13	NE	10	WNW	14	W	16	W	19	NE	14	ENE	15	E	14
Savannakhet	NE	18	NW	18	S	20	NNE	27	N	20	S	16	W	22	W	19	E	19	E	20	NE	24	E	24
Saravane	E	17	N	36	S	15	NE	35	W	16	SE	15	NNW	15	WNW	30	NE	16	S	12	N	16	SE	13
Pakse	NE	18	N	18	SE	25	SW	25	W	20	W	22	NE	22	SW	20	SW	20	N	19	N	16	N	21
Sekong	N	13	N	15	NE	15	W	10	W	12	S	10	W	9	NNW	10	W	13	NNW	20	W	10	N	16
Attapeu	NE	10	NNE	12	E	10	NNE	12	SSE	8	SW	8	S	15	S	10	E	9	NE	12	N	16	NNE	25

Remark:

N = North	NE = Northeast	ENE = East-North-East	NNE = North-North-East
E = East	SE = Southeast	ESE = East-South-East	SSE = South-South-East
S = South	SW = Southwest	WSW = West-South-West	SSW = South-South-West
W = West	NW = Northwest	WNW = West-North-West	NNW = Nrth-North-West

Step 4: Complete Land Acquisition Report

Lao People's Democratic Republic
Ministry of Education
Second Education Development Project (EDPII)
World Bank Project IDA Credit Number: 3886-LA, Grant Number: H0840-LA

Declaration form for Land Acquisition

Province: ……..
District: …….
Village: …….

I. Land acquisition:

1. Site for new school building:
   - ☐ The old site of school
   - ☐ The new site
   - ◆ Land belong to the village:
     - ☐ for housing construction
     - ☐ for agriculture production
     - ☐ free forest land
   - ◆ Land belong to private:
     - ☐ For housing construction, market cost amount: ....……..……..Kip
     - ☐ for agriculture production, market cost amount: ....……..……..Kip
     - ☐ free forest land , market cost amount: ....…….....Kip

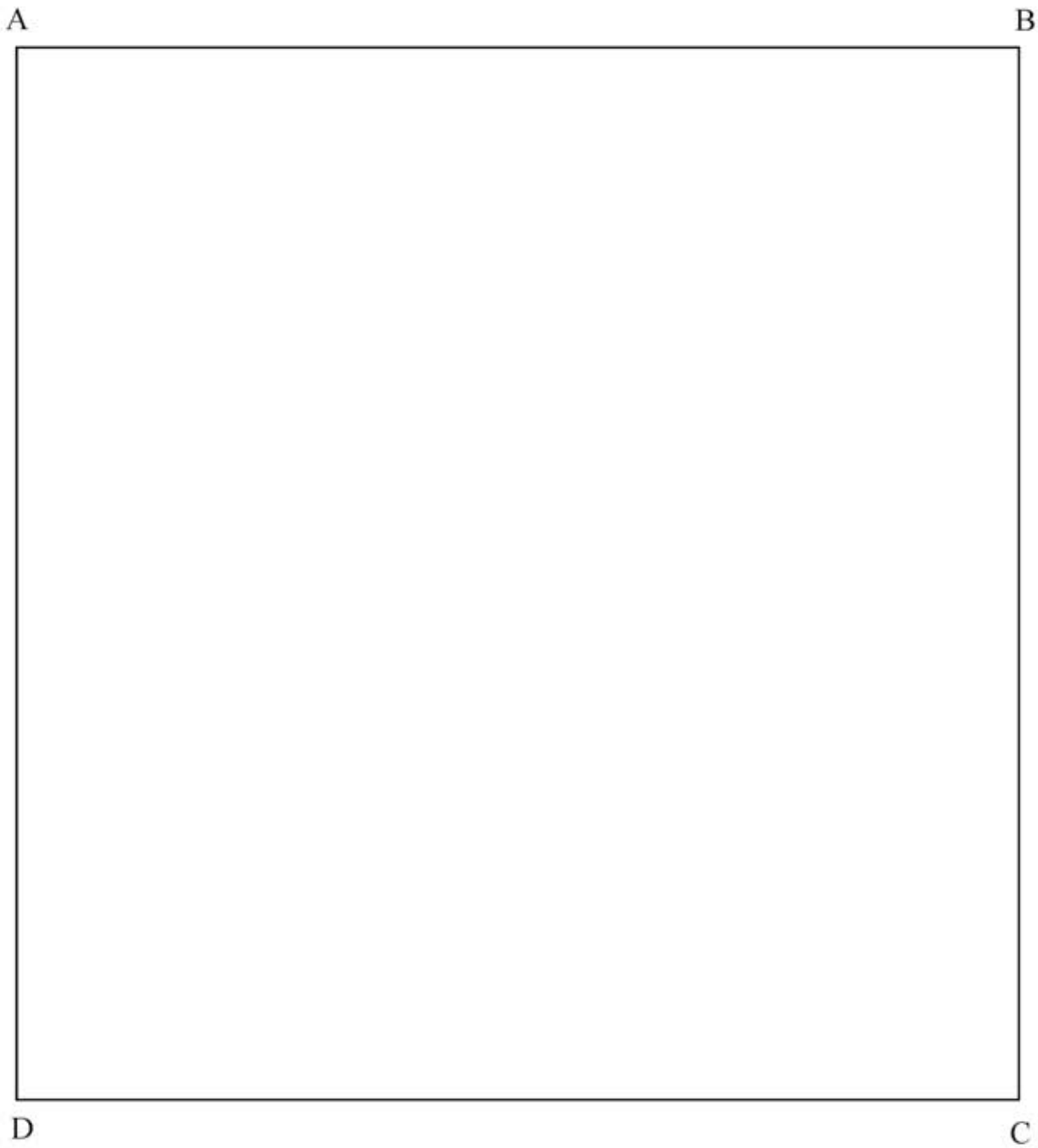
   (For Privately owned land, the owners must be entitled to compensation before the construction of school building. For land used for agriculture production, the users must be given new land to cultivate.)

I. Land for School Construction:

- ◆ Description of School Construction Area:
  - Location of School Construction Site in relation to Village
    ……
  - Shape of School Construction Site …….....
    with surface of: ……..... m^2
  - Owners of Land bordering School Compound
  - Eastern …….....
  - Western …….....
  - Northern ……..
- ◆ - Southern……Distance from village to school ..... m
- ◆ Existing way from village to school .....

Land Acquisition Plan for School Construction:

- Distance AB = ...m, BC = ...m, BC = ...m, BC = ...m



Signed and stamp of chief
of District Education Bureau .....

Signed and stamp of chief
of village.....

Lao People's Democratic Republic
Ministry of Education
Second Education Development Project (EDPII)
World Bank Project IDA Credit Number: 3886-LA, Grant Number: H0840-LA

Province: .....
District: ..... No. .....
Village: ..... Date .....

Request form

To: Director of District Education Bureau.....

Subject: to construction of school in the village ..... of Second Education Development Project (EDP II)

- According to the necessary need for the children to close primary school in the village
- According to the school construction of EDP II,

Chief of village ..... has request to the Director of District Education Bureau ..... for approval of school construction size 6x8 m amount: **two class rooms/ three class rooms/ four class rooms** to replacement of old school building, that temporarily school building, that constructed by Villagers

So that, I would like inform you to considerate our request to Provincial Construction Committee with the kind.

Request with other document:

1. Data of people of village
2. Number of school-age from 6-12 years old and Children form 0 - 5 years old
3. Site for school construction
4. Land acquisition

Signed and stamp of chief of Village .....

Data form
Of target villages of EDP II

Date:_____

Name of Enumerator:_____

Name of village: _____ District:_____ Province _____

A. Village Data

i) How long has the village been established in its present location? < 1 year □, 1-2 years □, 2-3 years □, >3 years □.

ii) Is there another village a maximum of 30 minutes or 1.5 km from the village? Yes □, No □

iii) If yes, please give the name of the village: _____

iv) Where is the village located?
(Remoteness is on a scale of 1-5, with 1 being the least remote, and 5 being the most remote. Please circle below)
On the road/ accessible by car all year = 1 ; On the road/ accessible by car only in the dry season = 2;
Off the road/ accessible by boat all year = 3 ; Off the road/ accessible by boat in the rainy season only = 4;
Off the road/ accessible by walking only all year = 5;

1 2 3 4 5

v) Village statistics

Ethnicity of Village	Number of Houses	Number of Families	Number of People in the village		Number of Children aged 0-5 years		Number of Children aged 6-12 years		Number of Children aged 13-14 years	
			Total	Female	Total	Female	Total	Female	Total	Female

B. School Data

i) Does the village have a school? Yes □, No □.
ii) If yes, how long has the school been established? < 1 year □ , 1-2 years □, 2-3 years □, > 3 years □.
iii) If yes, was the school built with support from an outside agency (donor or NGO)? Yes □ No □
iv) If no, how far away is the nearest school? 20 min walk □, >20 min walk □, 1 km □, >1 km □.

The next questions apply to either the village school or the nearest school.
v) How many classrooms does the school have? _____ vi) Does the school have suitable furniture? Yes □, No □
vii) Does the school have a usable latrine? Yes □, No □ viii) Is the school bright enough? Yes □, No □
ix) Does the school have storage room? Yes □, No □ x) Is the school properly insulated for the cold? Yes □ No □

xi) Condition of the school building (Please check the appropriate box)

Floor materials	Room 1	Room 2	Room 3	**Wall Materials**	Room 1	Room 2	Room 3	**Roof Materials**	Room 1	Room 2	Room 3
Dirt				Bamboo				Grass/ Thatch			
Bamboo				Round wood				Bamboo			
Wood				Timber board				Wood			
Cement				Cement/ Brick				Galvanized metal			

C. Student Data

i) Students enroled

Ethnicity of Student	Number of Children Enrolled 6-12 years		Number of Children Enrolled 13-14 years	
	Total	Female	Total	Female

Chief of Village: _____

Director of the District Education Bureau: _____

At: _____

BID FORM (main page)

Company Name and Address:

....	Telephone:..... Fax: ..... E-mail.....

Authorised Representative:

....	Telephone:..... Fax: ..... E-mail.....

The undersigned, having studied the Bidding Documents and the requirements of the specified services we hereby offer to provide the construction services, including supply of the specified construction materials, to UNICEF as per the following details:

Civil work Package No.: .....

1. Name of the School:	District:.....	Province:.....
2. Name of the School:	District:.....	Province:.....
3. Name of the School:	District:.....	Province:.....
4. Name of the School:	District:.....	Province:.....

Offered Price in Lao Kips

In figures:	In words: ....

This offer of Bid Price is valid in combination with the attached **Detail Estimate and the Unit Rates** for 60 days from the date of Bid Opening.

Remarks / Discounts / Concessions

Official Seal / Stamp of the Company	Signature of authorised Representative of the Company: ..... Date .....

Please attach copy of:

1. Valid business registration certificate, as applicable
2. Valid trade registration certificate, as applicable
3. Current tax registration / clearance certificate

Detail breakdown and the Unit Rates:

The following is presented tentative estimates of the quantities for major items of works for one unit of school building and Toilet-water unit. This bill of quantity is for reference only. The bidder may come up with different bill of quantity. The bidder may come across additional items of works or some of the listed ones may appear to be irrelevant. For making their estimates of the bid offer the bidder may use the items listed below and in addition the ones they like to add with their unit rates. The Contractors shall fill in its unit rates for the items to be undertaken in accordance with the Technical Specifications and Design Drawings. (This form may be reproduced for using it in case of more than one unit of school)

Bill of quantities

Item	Description	Unit	Quantity	Unit price	Amount
Stage - I					
1	**Earth Works (School Building)**				
1.1	Excavation for foundation (footing)	m3	33.36		
1.2	Excavation ditch for brick masonry wall 20cm thickness	m3	7.36		
1.3	Back filling for footing with suitable material (laterite) or mixed materials which included of sand, clay and aggregate, in layers not more than 20cm thickness including compacting and watering	m3	41		
1.4	Back filling for floor embankment with suitable material (laterite) or mixed materials which included of sand, clay and aggregate, in layers not more than 20cm thickness Including compacting and watering	m3	248		
1.5	Sand filling for floor embankment 10cm thickness Including compacting and watering to make smooth surface before concrete placing	m3	42		
1.6	**Earth works (Toilet-Water Unit)**				
1.6.1	Excavation for footing and ditch for brick wall 20cm thickness	m3	12		
1.6.2	Back filling for footing and floor embankment with suitable material	m3	11.9		
1.6.3	Excavation for septic tank	m3	9.6		
2	**Concrete Works (School Building)**				
2.1	Lean concrete 5cm thickness for footing, class 150kg/m3 using Lao Cement P-525 with mix proportion of 1 part Cement, 3 parts Sand and 5 parts Aggregate	m3	1.51		
2.2	Lean concrete 5cm thickness under brick masonry wall 20cm thick. class 150kg/m3 using Lao Cement P-525 with mix proportion 1 part cement, 3 parts Sand and 5 parts Aggregate	m3	1.84		
2.3	RCC concrete for footing, class 350kg/m3 using Lao Cement P-525 with mix proportion 1 part Cement, 2 parts Sand and 3 parts Aggregate, including VSI steel approved by Engineer	m3	4.4		
2.4	RCC concrete for tie beam, class 350kg/m3 using Lao Cement P-525 with mix proportion 1 part Cement, 2 parts Sand and 3 parts Aggregate, including VSI steel approved by Engineer	m3	6.9		
2.5	Plain concrete for slab 8cm thickness, class 350kg/m3 using Lao Cement P-525 with mix proportion 1 part Cement, 2 parts Sand and 3 parts Aggregate	m3	28.5		
2.6	Plain concrete for footpath and stair 5cm, class 350kg/m3 using Lao Cement P-525 with mix proportion 1 part Cement, 2 parts Sand and 3 parts Aggregate	m3	4.58		

2.7	RCC concrete for column, class 350kg/m3 using Lao Cement P-525 with mix proportion 1 part Cement, 2 parts Sand and 3 parts Aggregate, including VSI steel approved by Engineer	m3	6.73		
2.8	RCC concrete for roof beam, class 350kg/m3 using Lao Cement P-525 with mix proportion 1 part Cement, 2 parts Sand and 3 parts Aggregate, including VSI steel approved by Engineer	m3	9.925		
2.9	RCC concrete for Ridge beam and it support, class 350kg/m3 using Lao Cement P-525 with mix proportion 1 part Cement, 2 parts Sand and 3 parts Aggregate, including VSI steel approved by Engineer	m3	10.77		
2.10	RCC concrete lintel beam at top of handrail 10x15cm, class 350 kg/m3 using Lao Cement P-525 with mix proportion 1 part Cement, 2 parts Sand and 3 parts Aggregate, including VSI steel dia.6mm & dia.10mm, approved by Engineer	m3	0.55		
2.11	**Concrete works (Toilet-Water Unit)**				
2.11.1	Lean concrete 5cm thickness for footing, Septic and for brick wall 20cm thk, class 150kg/m3	m3	0.46		
2.11.2	RCC concrete for footing, class 350kg/m3	m3	0.6		
2.11.3	RCC concrete for tie beam, class 350kg/m3	m3	1		
2.11.4	Plain concrete for slab 8cm thickness, class 350kg/m3	m3	1.2		
2.11.5	Plain concrete for footpath 5cm thickness, class 350kg/m3	m3	0.9		
2.11.6	RCC concrete for column, class 350kg/m3	m3	0.4		
2.11.7	Plain concrete slab 12cm thickness for septic tank, class 350kg/m3	m3	1		
2.11.8	RCC concrete slab on top of septic tank 8cm thickness, class 350kg/m3	m3	0.64		
2.11.9	Construction RC water tank 1.5x0.6m as shown on the drawing including drainage system and all accessories (piping, tap, valve...)	Ls	1		
Stage-II					
3	**Masonry and Plastering Works (School Building)**				
3.1	Brick masonry wall 20cm thickness under ground beam, laying with mortar approximately 1cm thk. Using Lao Cement P-425 with mix proportion 1 part Cement and 3 parts Sand	m2	138		
3.2	Brick masonry wall 20cm thickness for stair & ram, laying with mortar approximately 1cm thickness Using Lao Cement P-425 with mix proportion 1 part Cement and 3 parts Sand	m2	9		
3.3	Brick masonry wall 10cm thickness and plastering 1.2cm both side including for beam. For partition wall and handrail along the corridor laying with mortar approximately 1cm thickness (including lintel and stud where it is deem necessary). Using Lao Cement P-425 with mix proportion 1 part Cement and 3 parts Sand	ml	530		
3.4	Installation ventilation block 20x40cm including plastering, laying with mortar approximately 1cm thickness using Lao Cement P-425 with mix proportion 1 part Cement and 3 parts Sand	m2	19.2		
3.5	**Masonry and Plastering Works (Toilet-Water Unit)**				
3.5.1	Brick masonry wall 20cm thk. under ground beam	m2	6.7		
3.5.2	Brick masonry wall 10cm thk and plastering 1.2cm thickness for both side. For rooms partition	m2	77.5		
3.5.3	Brick wall 20cm thickness for septic thank and plastering 1.2cm thickness for both side	m2	16		
3.5.4	Brick wall 10cm thickness for septic thank and plastering 1.2cm thickness for both side	m2	6.6		
3.5.5	Installation ventilation block 20x40cm including plastering	m2	8.64		
4	**Installation Works (School Building)**				
4.1	Supply and installation Door "D1: 2.1x1m" frame & panel Mai Khen or Mai Phao including safety lock, hinges, latches and handles as specified on drawings or approved by Engineer	set	14		

4.2	Supply and installation window "W1: 1.2x1.75m" frame & panel including safety lock, hinges, latches, handles and hooks as specified on drawings or approved by Engineer	set	15		
4.3	Supply and installation window "W2: 1.2x0.9m" frame & panel including safety lock, hinges, latches, handles and hooks as specified on drawings or approved by Engineer	set	11		
4.4	**Installation works (Toilet-Water Unit)**				
4.4.1	Supply and installation Door "D2: 1.8x0.7m" frame & panel Mai Khen or Mai Phao including safety lock, hinges, latches and handles as specified on drawings or approved by Engineer	set	4		
4.4.2	Supply and installation Water Closed, American standard brand including PVC air vent pipe, waste drain pipe, etc. as necessary or approved by Engineer	set	4		
4.4.3	Supply and install water supply including all accessories (pipe, tap, valve...) manufactured from Thailand for toilet room and washing area.	set	10		
4.4.4	Supply and install floor drain including all accessories (pipe, tap, valve...) manufactured from Thailand as shown on drawings	set	2		
Stage-III					
5	**Roofing Structure and Ceiling (School Building)**				
5.1	Supply and install wooden roof frame with medium wood Mai Khen or Mai Phao, Rafter 5x10cm, Purlin 4x8cm and applied with termite protection chemical	m2	602.4		
5.2	Supply and install corrugate galvanize roof sheet VXP Zincalume 0.35 mm thk., including ridge capping flashing and roof drain	m2	602.4		
5.3	Supply and installation of Eave board 2x(15+20)cm Medium wood Mai Khen or Mai Phao, and shall be plained before installation	ml	125		
5.4	Supply and install plankwood ceiling 1.5x10cm Mai Sack dried and shall be plained before installation, including frame 4x8cm Mai Khen or Mai Phao with termite protection paint as shown on drawing or approved by engineer.	m2	443		
5.5	**Roofing Structure and Ceiling (Toilet-Water Unit)**				
5.5.1	Supply and install wooden roof frame Mai Khen or Mai Phao Tie beam 5x10cm, Rafter 5x10cm, Purlin 4x8cm and applied with termite protection chemical	m2	31.5		
5.5.2	Supply and install corrugate galvanize roof sheet VXP Zincalume 0.35 mm thickness, including ridge capping flashing	m2	31.5		
5.5.3	Supply and installation of Eave board 2x(15+20)cm Medium wood Mai Khen or Mai Phao, and shall be plained before installation	ml	24		
5.5.4	Supply and install plankwood ceiling 1.5x10cm Mai Sack dried and shall be plained before installation, including frame 4x8cm Mai Khen or Mai Phao as shown on drawing or approved by engineer.	m2	23.23		
5.5.5	Supply and install plywood 4mm thickness ceiling inside including wood frame 4x8cm	m2	18.72		
6	**Painting Works (School Building)**				
6.1	Painting wall inside building with Matt paint U-90 for interior or equivalent, 3 coats	m2	540		
6.2	Painting wall and handrail outside building with Matt paint U-90 for exterior or equivalent, 3 coats	m2	460		
6.3	Painting column outside with Matt paint U-90 for exterior or equivalent, 3 coats	nos	10		
6.4	Painting ceiling inside & outside building with Gloss paint U-90 or equivalent, 3 coats	m2	443		
6.5	Painting eave board with Gloss paint U-90 or equivalent, 3 coats	ml	125		
6.6	Painting foot wall outside and inside building for 20cm high with Gloss paint U-90 for exterior or equivalent, 3 coats	m2	92		
6.7	Painting door frame & panel "D1" with Gloss paint U-90 or equivalent, 3 coats	set	14		
6.8	Painting door frame & panel "W1" with Gloss paint U-90 or equivalent, 3 coats	set	15		
6.9	Painting door frame & panel "W2" with Gloss paint U-90 or equivalent, 3 coats	set	11		
6.11	**Painting Works (Toilet-Water Unit)**				
6.11.1	Painting wall inside building with Matt paint U-90 for interior or equivalent, 3 coats	m2	111.6		

6.11.2	Painting wall outside building with Matt paint U-90 for exterior or equivalent, 3 coats	m2	49.2		
6.11.3	Painting ceiling inside building with Matt paint U-90, 3 coats	m2	18.72		
6.11.4	Painting ceiling outside building with Gloss paint U-90, 3 coats	m2	23.23		
6.11.5	Painting eave board with Gloss paint U-90 or equivalent, 3 coats	ml	26.8		
6.11.6	Painting foot wall outside building with Gloss paint U-90 for exterior or equivalent, 3 coats for 80cm high	m2	39.36		
6.11.7	Painting door frame & panel "D1: 1.8x0.7m" with Gloss paint U-90 or equivalent, 3 coats	set	4		
Other likely items					
7.1	Rock excavation (hard)	m3			
7.2	Rock excavation (soft)	m3			
8	**Electrical work**				
8.1	Supply double fluorescence lighting 2x40W with all accessories (electrical wire, switch, capping....) Philip brand as shown on drawing or approved by engineer	set	60		
8.2	Supply single fluorescence lighting 1x40W with all accessories (electrical wire, switch, capping....) Philip brand as shown on drawing or approved by engineer	set	8		
8.3	Supply single fluorescence lighting 1x20W with all accessories (electrical wire, switch, capping....) Philip brand as shown on drawing or approved by engineer	set	9		
8.4	Supply socket with 3 plugs with all accessories (electrical wire, PVC board, capping....) Philip brand as shown on drawing or approved by engineer	set	8		
9.1	**Brick Soling**: On a graded and compacted soil surface add a 2-3 cm thick layer of sand. Lay bricks packed together over this sand layer to result into a uniform plain surface. Brick soling may be used for placing concrete footing or for concreting a floor. This may be used in place of plain concrete or to reduce the magnitude of concrete.	m2			

Total=

(Sample provided by UNICEF)
Contract Agreement
with
Civil works Contractors
for
Construction of BFC School Buildings

(Sample) Contract for BFC School Construction

THIS CONTRACT FOR construction of ….xxxx (nos)…… school buildings in ….xxxxxx (districts of) xxxxx (provinces)…… as specified herein (together with the annexes hereto, this "Agreement") is made on ….xxxxxx [date]…..

BETWEEN: UNICEF, THE UNITED NATIONS CHILDREN'S FUND ("UNICEF"), an international inter-governmental organisation established by the General Assembly of the United Nations by resolution No. 57(1) of 11 December 1946 as a subsidiary organ of the United Nations, having its headquarters at UNICEF House, Three United Nations Plaza, New York, New York, 10017, U.S.A. and having an office at

UNICEF
KM3 Thadeua Road, Watnak Quarter
P. O. Box 1080, Vientiane, Lao PDR
Telephone: 315200-04; Fax: 314852;

AND: …. Xxxxx [name of contractor]……., a corporation organised and existing under the laws of Lao PDR and having its principal offices at …xxxxx [address]…. (the "Contractor");

UNICEF and the Contractor are hereinafter collectively referred to as the "Parties".

WHEREAS:

A. UNICEF, in accordance with its Charter and Mission Statement, works with governments, civil society organisations and other partners in more than one hundred and sixty countries to advance children's rights to survival, protection, development and participation, and in doing so is guided by the Convention on the Rights of the Child.

B. The Government of Lao PDR has adopted Education for All (EFA) policy objectives in promoting education in the country.

C. UNICEF Vientiane office intends, in support of the EFA policy objectives of the Lao PDR, by providing financial and technical assistance, to implement 100 primary school development packages in Luang Prabang and Xieng Khouang provinces between 2006/07 to 2008/09 period.

D. By Invitation to Bid, a copy of which is attached as ANNEX – III UNICEF invited bids for the provision of civil works construction services for constructing in full, including supply of construction materials, …xxx (number) of School Buildings and xxxx (number) of Toilet-Water Units.

E. The Contractor by responding to the Invitation to Bid represents that it is qualified, capable and willing to provide the sought construction services in its totality.

F. UNICEF wishes to engage the Contractor to undertake the work, all on the terms and conditions set forth in this Contract ; and the Contractor represents that it is qualified, ready, able and willing to carry out the work on the same terms and conditions;

NOW, THEREFORE, the Parties hereto mutually agree as follows:

1. CONTRACT DOCUMENTS

1.1 This document and all annexes hereto, together with the following named documents, which are incorporated herein by reference, constitute the entire Contract (herein referred to as the "Contract" or this "Contract") between UNICEF and the Contractor:

(a) Annex I – **Scope of the civil works**

(b) Annex II – **Design Drawings, Bill of Quantity and Technical Specifications**

(c) Annex III – **The Invitation to Bid (letter inviting the bid)**

(d) Annex IV – The, duly filled and authenticated by signing and stamping by the Contractor, **Bid Form**.

1.2 The Contract documents are to be taken as complementary of one another, but in case of ambiguities, discrepancies or inconsistencies among them, the Contract shall be interpreted on the basis of the following order of priority:

(a) this document;

(b) Annexes I and II;

(c) Annex IV; and

(d) Annex III.

1.3 The Contract represents the entire and integrated agreement of the Parties with regard to the subject matter hereof and supersedes all prior agreements, negotiations and representations, either written or oral.

2. DEFINITIONS

2.1 In this Agreement, the following terms shall have the following meaning:

2.1.1 **Defects**. Any part of the Works that is not completed in accordance with this Agreement.

2.1.2 **Drawings**. Drawings of the Works, as included in this Agreement, and any additional and modified drawings issued by (or on behalf of) UNICEF in accordance with this Agreement.

2.1.3 **Equipment**. The Contractor's apparatus, machinery and vehicles for use in the execution of the Works.

2.1.4 **Laws**. All national legislation, statutes, ordinances and other laws and regulations of any legally constituted public authority.

2.1.5 **Materials**. Things of all kinds intended to form or forming part of the Works, including the supply-only materials.

2.1.6 **Site or Sites**. The place or places where the Works are to be executed and any other place defined as such in the Drawings and Contract Documents.

2.1.7 **Specifications**. The Technical Specifications of the Works included in this Agreement and any modifications or additions approved and communicated to concerned party by UNICEF.

2.1.8 **Suppliers**. Persons or entities that entered into an agreement directly with the Contractor to supply materials and equipment fabricated specifically for the Works.

2.1.9 **Works**. Permanent and/or temporary Works required by the Contract Documents as set forth in this Agreement.

3. GENERAL OBLIGATIONS OF THE CONTRACTOR

3.1 The Contractor shall, with due care and diligence, execute and maintain the Works and provide all labour, materials, equipment, transportation and other facilities necessary to substantially complete the Works by the Substantial Completion Date, and in accordance with the Contract Documents and the standards defined by this Agreement.

3.2 The Contractor shall take full responsibility for the adequacy, stability and safety of all Site operations and methods of construction and for security of the Site itself, including the security of all Materials stored or being used on the Site.

3.3 All materials used in the course of these Works shall be new and proper for their use. No reusable materials coming from the Site shall be used unless permitted by UNICEF. Other materials shall be stored on Site until the end of the Works. All materials, equipment and products shall be installed in accordance with the written recommendations of the manufacturer.

3.4 The Contractor shall not permit any labourer's, materialperson's, mechanic's or other similar lien (hereinafter, referred collectively, as "Lien") to be filed or otherwise imposed on any

part of the Works, or the premises of UNICEF. If any Lien is filed or otherwise imposed, and if the Contractor does not cause such Lien to be released and discharged forthwith, or file a bond in lieu thereof, UNICEF shall have the right, but not the obligation, to pay all sums necessary to obtain such release and discharge, and to deduct all amounts so paid from moneys otherwise due the Contractor.

3.5 When required, the Contractor shall cooperate and share the Site with other contractors and public authorities.

4. General Rights and Obligations of UNICEF

4.1 The Contractor must allow unlimited access to the **designated representative**, or to her/his **authorised representatives**, to supervise the Works. The Designated Representative is entitled to review the type, quantity and quality of materials and workmanship used in the Works and to render necessary instruction to the Contractor and its personnel in the site for ensuring compliance with the Contract Documents and the standards defined by this Agreement.

4.2 UNICEF will issue all certificates upon satisfaction of conditions necessary for the issuance of such certificates, supply all necessary information and written and/or verbal instructions, as appropriate, for the Contractor to carry out the Works properly.

4.3 To the extent it is able, UNICEF shall give to the Contractor right of access to, and possession of, the Site within such times as is required to enable the Contractor to proceed in accordance with this Agreement.

4.4 UNICEF shall have the right to review samples of construction materials and fixtures to be incorporated in the Works. The Contractor shall submit such samples, and relevant information, in sufficient time for UNICEF to complete review of samples. Each sample shall be labelled as to origin and intended use in the Works.

4.5 UNICEF shall have the right to issue, and the Contractor shall comply with, additional instructions. Such additional instructions shall complement and/or clarify the Contract Documents and shall have no effect on the definition of the Works, the Prices and/or the Substantial Completion Dates. Such instructions may take the form of technical specifications, drawings, samples, models or instructions. All such instructions shall be in written or in verbal form as appropriate and practical.

4.6 For the purpose of construction supervision and related functions within the scope of this Agreement, UNICEF designates one of its officials, to be notified in writing to the contractors, to undertake regular activities as authorised representative. The designated official may be assisted by other officials as deemed necessary.

4.7 UNICEF or its designated representative, if consider necessary, may share the rights and obligations as outlined in Article 4.2, 4.3, 4.4 and 4.5 with concerned Provincial Education Services Office, the government line agency collaborating for implementation of the project.

5. Scope of Work

5.1 The Contractor shall complete the following Works:

5.1.1 Full construction, starting from site clearance to final finishing of

i) …..xxx (name) of School Buildings and Toilet-Water Units in ….xxx (district) of …xxx (province) of Lao PDR as described in detail in Annex I and II.

ii) …..xxx (name) of School Buildings and Toilet-Water Units in ….xxx (district) of …xxx (province) of Lao PDR as described in detail in Annex I and II.

iii) …..xxx (name) of School Buildings and Toilet-Water Units in ….xxx (district) of …xxx (province) of Lao PDR as described in detail in Annex I and II.

iv) …..xxx (name) of School Buildings and Toilet-Water Units in ….xxx (district) of …xxx (province) of Lao PDR as described in detail in Annex I and II.

5.2 The Contractor shall comply with the norms and technical standards applicable to the construction of buildings as defined by the Government of Lao PDR or its appropriate line agencies.

6. SCHEDULE FOR COMPLETION OF WORKS

6.1 The Contractor shall commence and complete the Works in accordance with the following schedule:

Sr. No.	Site: Name and No.	Commencement of the construction after mobilisation of the crew, equipments and construction materials to the site	Stage I: Sub-ground level works including foundation, plinth level tie beam casting, and casting of RCC columns	Stage II: Brick masonry work, placing of doors and windows frames, casting of all the beams and roof constriction, concreting the floor	Stage III: Construction of ceiling, floor finish, fitting of doors and windows, plastering, whitewash and painting and clearing the site of surplus materials and any equipment.
1	I	First week November, 2007	Second week December 2007 (5 Weeks)	End of January 2008 (6 weeks)	March first week 2008 (5 weeks)
2	II	First week November, 2007	Second week December 2007 (5 Weeks)	End of January 2008 (6 weeks)	March first week 2008 (5 weeks)
3	III	First week November, 2007	Second week December 2007 (5 Weeks)	End of January 2008 (6 weeks)	March first week 2008 (5 weeks)
4	IV	First week November, 2007	Second week December 2007 (5 Weeks)	End of January 2008 (6 weeks)	March first week 2008 (5 weeks)

6.2 A building diary shall be kept at the Site and maintained daily by the Contractor. This diary shall describe all works started and completed each day and shall be checked periodically by UNICEF.

7. SUBSTANTIAL AND FINAL COMPLETION

7.1 The Works will be deemed **substantially completed** when they are completed the Stage III as per Article 6.1 and in accordance with the Contract Documents and the standards defined by this Agreement or when they are effectively used for the purpose for which they are intended.

7.2 UNICEF shall inspect the Works at the Site on the date they are substantially completed and UNICEF will issue a certificate of substantial completion (the "**Certificate of Substantial Completion**"), provided that the Works are satisfactory according to the Contract Documents and the standards defined by this Agreement. The Certificate of Substantial Completion shall list all Defects that must be remedied by the Contractor prior to a final inspection by UNICEF.

7.3 UNICEF will carry out a final inspection at each Site (the "**Final Inspection**") six (6) months after the issuance of the Certificate of Substantial Completion for the Site. The Works shall be deemed to be completed when all Defects listed on the Certificate of Substantial Completion, and all Defects that have become apparent after the issuance of the Certificate of Substantial Completion, have been remedied by the Contractor and UNICEF considers the Works to be satisfactory according to the Contract Documents and the standards defined by this Agreement. UNICEF will then issue a **Certificate of Final Completion,** which will be equivalent to defect liability certificate and then the Contractor is considered to have been relived from any construction liabilities.

7.4 Upon signing of the Certificate of Final Completion at each Site, the Site and Works shall be taken over by UNICEF from the Contractor indicating that the Contractor is relieved of its obligation as defined by the agreement.

8. STRUCTURAL INTEGRITY

8.1 The Contractor shall provide a written guarantee of the integrity of the structure of the building, which shall remain valid for a period of at least ten (10) years. The guarantee shall be submitted to UNICEF prior to issuance of the Certificate of Substantial Completion.

9. CONTRACT PRICE

9.1 In full and final consideration of the complete and satisfactory performance of its obligations hereunder, UNICEF shall pay the Contractor the following amounts in respect of the completion of the Works (the "Contract Price"):

Contract Package: No. and Name	Civil works details	District / Province	Price in Kip
....xxxx (Number): ....xxxx (name if any)	..xxxx (name) School Building and Toilet-Water Unit	...xxxx (name of district) / .....xxx (name of the Province)	...xxxxx (in figures and words)
	..xxxx (name) School Building and Toilet-Water Unit	...xxxx (name of district) / .....xxx (name of the Province)	...xxxxx (in figures and words)
	..xxxx (name) School Building and Toilet-Water Unit	...xxxx (name of district) / .....xxx (name of the Province)	...xxxxx (in figures and words)
	..xxxx (name) School Building and Toilet-Water Unit	...xxxx (name of district) / .....xxx (name of the Province)	...xxxxx (in figures and words)
....xxxx (Number): ....xxxx (name if any)	..xxxx (name) School Building and Toilet-Water Unit	...xxxx (name of district) / .....xxx (name of the Province)	...xxxxx (in figures and words)
	..xxxx (name) School Building and Toilet-Water Unit	...xxxx (name of district) / .....xxx (name of the Province)	...xxxxx (in figures and words)
	..xxxx (name) School Building and Toilet-Water Unit	...xxxx (name of district) / .....xxx (name of the Province)	...xxxxx (in figures and words)
	..xxxx (name) School Building and Toilet-Water Unit	...xxxx (name of district) / .....xxx (name of the Province)	...xxxxx (in figures and words)

9.2 The price is not subject to any adjustment or revision because of price or currency fluctuations, the actual costs incurred by the Contractor in the performance of its obligations hereunder or modifications to this Agreement or the Contract Documents without a duly signed amendment in accordance with Article 35.

10. PAYMENT

10.1 The Price for the Works shall become payable as follows:

10.1.1 twenty per cent (20%) of the Price will be paid to the Contractor as Mobilisation Advance, in response to written request for it, upon i) signing of the Contract, ii) receipt by UNICEF of the **Performance Guarantee Certificate** (sample copy of this annexed herewith) required under Article 11 of this Agreement and iii) commencement of the Works.

10.1.2 about twenty five per cent (25%) of the Price, with actual amount depending upon the Bill of Payment, will be paid to the Contractor upon completion by the Contractor, and acceptance by UNICEF, of the Stage I civil works.

10.1.3 about twenty five per cent (25%) of the Price, with actual amount depending upon the Bill of Payment, will be paid to the contractor upon completion by the Contractor, and acceptance by UNICER, of the Stage II civil works.

10.1.4 about twenty per cent (20%) of the Price or about forty per cent (40%) of the price in case Mobilisation Advance as pet the Article 10.1.1 is not paid, will be paid to the Contractor upon Substantial Completion of the Works (completion of Stage III civil works) and issuance by UNICEF of the Certificate of Substantial Completion of the Works for the Site.

10.1.5 ten per cent (10%) of the Price will be paid to the Contractor upon issuance of the Certificate of Final Completion or six (6) months following the date of issuance of the Certificate of Substantial Completion, whichever occurs later, provided that the Contractor has remedied

all defects that have become known to UNICEF and the Contractor during the said six (6) month period.

10.2 UNICEF shall make payment within thirty (30) days of receipt of the Contractor's invoice. Payments effected by UNICEF to the Contractor shall be deemed neither to relieve the Contractor of its obligations in part or full under this Agreement nor as acceptance by UNICEF of the Contractor's performance in connection with the Works.

10.3 All payments shall be made by UNICEF to the following address of the Contractor:
…xxxx (name of the contractor company)
…..xxxx (address)

11. PERFORMANCE GUARANTEE

11.1 The Contractor shall, no later than seven (7) working days following the effective date of this Agreement as set forth in Article 37 of this Agreement, at its own expense furnish a performance guarantee substantially in the form set forth in Annex V, and with such Surety or Sureties as shall be approved by UNICEF.

11.2 The value of performance guarantee will be in the amount of Thirty per cent (10%) or more of the Contract Price, if the contractor wishes to be paid the Mobilisation Advance as per Article 10.1.1. If the contractor does not require Mobilisation Advance then the value of performance guarantee will be in the amount of Ten per cent (10%) or more of the Contract Price.

12. LIQUIDATED DAMAGES

12.1 If the Contractor fails to complete the Works in accordance with the dates stipulated in Article 6 above, UNICEF shall have the right to deduct from any payment due the Contractor the amount of one Million Lao Kips (Kip 1,000,000.00) per day of delay up to a maximum of ten per cent (10%) of the Contract Price. These liquidated damages shall not relieve the Contractor of his obligations or responsibilities that it may have under the Agreement.

13. SITE INSPECTION BY THE CONTRACTOR

13.1 The Contractor shall have inspected and examined the Site, its surroundings, data on sub-surface and hydrological conditions and environmental aspects. The Contractor shall be responsible for the correct positioning of the Works and shall rectify any error in the positions, levels, dimensions or alignment of the Works.

14. FIRE PREVENTION AND SAFETY

14.1 The Contractor shall be responsible for fire prevention on the Site where the Works are being performed. Fire fighting equipment shall be kept on Site and under the control of the Contractor at all times during the period when Works are taking place on the Site and during rest breaks. The Contractor shall ensure that his employees and sub-contractors can operate the fire fighting equipment. All fire fighting equipment must be in good working condition. The Contractor's employees and sub-contractors shall carry out any operations requiring exposed flame or welding in a careful and safe manner.

14.2 The Contractor is responsible for ensuring the safety of all and any, including the construction worker, spectators and children reaching the construction site or its effective zone of construction influence.

15. SITE CLEANLINESS

15.1 The Site shall be kept clean of debris at all times. Progressively and at the end of the Works, the Contractor shall, according to the instruction of UNICEF, clean and keep clean the building and the Site.

16. CARE OF THE ENVIRONMENT

16.1 The Contractor shall ensure that minimal damage occurs to the environment, the vegetation, existing structures and utilities as a result of the Works. The Contractor shall be responsible to remedy damage, other than minimal damage, to the environment, the vegetation, existing structures and utilities at no cost to UNICEF.

17. REPORTING AND RECORDS

17.1 The Contractor shall provide regular reports detailing the progress of the Works, costs incurred and estimate of time and costs to completion. Reports shall be submitted on a monthly basis in a format to be mutually agreed upon by the Parties within ten (10) days after signing of this Agreement.

17.2 The Contractor shall maintain records and receipts for the purchase of all Materials and remuneration of labour used in the Works and shall make such records and receipts available for inspection by UNICEF upon request.

18. LEGAL STATUS

18.1 The Contractor shall be considered as having the legal status of an independent contractor vis-à-vis UNICEF. The Contractor's personnel and sub-contractors shall not be considered in any respect as being the employees or agents of UNICEF.

19. CONTRACTOR'S PERSONNEL AND SUB-CONTRACTOR

19.1 The Contractor shall be responsible for the professional and technical competence of its employees and will select, for work under this Agreement, reliable individuals who will perform effectively in the implementation of the Agreement, respect the local customs, and conform to a high standard of moral and ethical conduct.

19.2 In the event the Contractor requires the services of sub-contractors, the Contractor shall obtain the prior written approval and clearance of UNICEF for all sub-contractors. The approval of UNICEF of a sub-contractor shall not relieve the Contractor of any of its obligations under this Contract. The terms of any sub-contract shall be subject to and in conformity with the provisions of this Agreement.

20. CONTRACTOR'S LIABILITY

20.1 The Contractor shall be liable against all risks in respect of its property and any equipment used for the execution of this Agreement.

20.2 The Contractor shall be liable under the legal provisions of the country for all appropriate workmen's compensation with respect to its employees to cover claims for death, bodily injury or damage to property arising from the execution of this Agreement. Such liability shall include sub-contractors.

20.3 The Contractor shall be liable to cover third party claims under the legal provisions of the country for death or bodily injury, or loss of or damage to property, arising from or in connection with the provision of work under this Agreement or the operation of any vehicles, boats, aeroplanes or other equipment owned or leased by the Contractor, its employees or sub-contractors performing work or services in connection with this Agreement.

21. FORCE MAJEURE

21.1 In the event of and as soon as possible after the occurrence of any cause constituting force majeure, the Contractor shall give notice and full particulars in writing to UNICEF of such occurrence or change if the Contractor is thereby rendered unable, wholly or in part, to perform its obligations and meet its responsibilities under this Agreement. The Contractor shall also notify UNICEF of any other changes in conditions or the occurrence of any event that interferes or threatens to interfere with its performance of this Agreement. On receipt of the notice required under this Article, UNICEF shall take, in its sole discretion, such action as it considers to be appropriate or necessary in the circumstances, including the granting to

the Contractor of a reasonable extension of time in which to perform its obligations under this Agreement.

21.2 If the Contractor is rendered permanently unable, wholly, or in part, by reason of force majeure to perform its obligations and meet its responsibilities under this Agreement, UNICEF shall have the right to suspend or terminate this Agreement on the same terms and conditions as are provided for in Article 24.2, "Termination by UNICEF", except that the period of notice shall be seven (7) days instead of fourteen (14) days.

21.3 Force majeure as used in this Article means acts of God, war (whether declared or not), invasion, revolution, insurrection, or other acts of a similar nature or force.

22. SUSPENSION BY UNICEF

22.1 Without prejudice to any other rights and remedies available to it, UNICEF may by written notice to the Contractor suspend for a specified period, in whole or in part, payments to the Contractor or the Contractor's obligation to continue performance under this Agreement, if in UNICEF's judgement:

22.1.1 Any conditions arise which interfere, or threaten to interfere, with the successful completion of the services under this Agreement, the execution of the Works or the accomplishment of the purpose thereof; or,

22.1.2 The Contractor shall have failed, in whole or in part, to perform any of the terms and conditions of this Agreement.

22.2 After suspension under Article 22.1 above, the Contractor shall be entitled to reimbursement by UNICEF of actual and substantiated costs resulting from commitments entered into in accordance with this Agreement prior to the commencement period of such suspension. The Contractor undertakes to use best efforts to minimise any such costs and shall include a provision in its contracts with sub-contractors which entitles it to suspend such sub-contracts during any suspension period under this Agreement.

23. TERMS AND TERMINATION

23.1 This Agreement will commence on the Commencement Date and terminate upon payment of the final instalment of the Contract Price; provided however that either Party may exercise its right to early termination in accordance with this Agreement.

24. TERMINATION BY UNICEF

24.1 UNICEF may terminate this Agreement at any time on thirty (30) days' written notice to the Contractor if, in UNICEF's judgement, it is in UNICEF's interest to do so.

24.2 If the Contractor fails, in whole or in part, to fulfil any of its obligations under this Agreement in a timely manner UNICEF may, by notice to the Contractor, demand that the Contractor perform those obligations. If (a) the Contractor fails to perform those obligations within thirty (30) days after receipt of such notice, or (b) the Contractor shall have become insolvent or taken steps to make accommodation with its creditors by reason of an inability to pay its debts as and when they come due, or (c) if control of the Contractor changes for any reason including by reason of insolvency (each an "Event of Default"), then UNICEF may, without prejudice to any other rights or remedies and notwithstanding any suspension under the provisions of Article 22 above, terminate this Agreement upon not less than fourteen (14) days written notice to the Contractor.

24.3 Upon termination of this Agreement,

24.3.1 the Contractor shall take immediate steps to terminate its services in a prompt and orderly manner and to reduce losses and to keep further expenditures to a minimum.

24.3.2 the Contractor shall be entitled, except in the case of an Event of Default by the Contractor, to be paid for the work satisfactorily completed on the Works and for the materials delivered

to the Site as of the date of termination, plus maximum of Ninety per cent (90%) of the actual, substantiated costs resulting from commitments entered into prior to the date of termination as well as any reasonable substantiated direct costs incurred by the Contractor as a result of the termination. But the Contractor shall not be entitled to receive any other or further payment, or any damages for the termination hereunder. In the case of disagreement between the Parties as to the existence of an Event of Default, the matter shall be resolved in accordance with the provision of Article 27 hereof.

25. TERMINATION BY THE CONTRACTOR

25.1 If UNICEF fails, in whole or in part, to fulfil any of its obligations under this Agreement in a timely manner the Contractor may, by notice to UNICEF, demand that UNICEF perform those obligations. If UNICEF fails to perform those obligations within thirty (30) days after receipt of such notice the Contractor may terminate this Agreement upon not less than fourteen (14) days' written notice to UNICEF. In the case of disagreement between the Parties as to whether UNICEF has fulfilled such obligations, the matter shall be resolved in accordance with the provision of Article 27 hereof.

25.2 Upon termination of this Agreement under this Article, the provisions of Article 24.3.2 hereof shall apply.

26. ASSIGNMENT

26.1 The Contractor shall not assign the whole or any part of this Agreement or any benefit or interest in or under this Agreement without the prior written agreement of UNICEF. Failure to obtain such prior written agreement will be considered an Event of Default under this Agreement and UNICEF shall have the right to terminate this Agreement in accordance with Article 24 herein.

27. SETTLEMENT OF DISPUTES

27.1 **Amicable Settlement**

The Parties shall use their best efforts to settle amicably any dispute, controversy, or claim relating to this Agreement. Where the Parties wish to seek such an amicable settlement through conciliation, the conciliation shall take place in accordance with the UNCITRAL Conciliation Rules then in force, or according to such other procedure as may be agreed between the Parties.

27.2 **Arbitration**

Any such dispute, controversy or claim which is not settled amicably within sixty (60) days after receipt by one Party of the other Party's request for such amicable settlement, shall be referred by either Party to arbitration in accordance with the UNCITRAL Arbitration rules then in force. The Parties shall be bound by an arbitration award rendered as a result of such arbitration as the final adjudication of such dispute. The costs of the procedure shall be shared equally by the Parties. In no event shall UNICEF be liable for incidental, indirect or consequential damages or for lost revenue or excess revenue. The arbitral tribunal shall have no authority to award no interest in excess of four per cent (4%) and such interest shall be simple interest only. As used herein, the term "UNCITRAL" means the United Nations Commission on International Trade.

28. NO WAIVER OF PRIVILEGES AND IMMUNITIES

28.1 Nothing contained in or relating to this Agreement shall be deemed a waiver, express or implied, of any of the privileges and immunities of the United Nations and its subsidiary organs, including UNICEF, whether under the Convention on the Privileges and Immunities of the United Nations, or otherwise, and no provision of this Agreement shall be interpreted or applied in a manner, or to an extent, inconsistent with such privileges and immunities.

29. TAXES AND DUTIES

29.1 Section 7 of the Convention on the Privileges and Immunities of the United Nations provides that the United Nations, including its subsidiary organs, including UNICEF, is exempt from all direct taxes and custom duties. Accordingly, the Contractor authorises UNICEF to deduct from the Contractor's invoices any amount representing such taxes or duties charged by the Contractor to UNICEF. Payment of such corrected invoiced amounts shall constitute full payment by UNICEF. In the event any taxing authority refuses to recognise UNICEF's exemption from such taxes, the Contractor shall immediately consult with UNICEF to determine a mutually acceptable procedure.

30. USE OF UNITED NATIONS AND UNICEF NAME AND EMBLEM

30.1 The Contractor shall not use the name, emblem or official seal of the United Nations or UNICEF or any abbreviation of these names for any purpose.

31. OFFICIALS NO TO BENEFIT

31.1 The Contractor warrants that no official of UNICEF or the United Nations has received or will receive or will be offered by the Contractor any direct or indirect benefit arising from this Agreement or the award of this contract. The Contractor agrees that breach of this provision is a breach of an essential term of this Agreement.

32. PROHIBITION ON ADVERTISING

32.1 The Contractor shall not advertise or otherwise make public that the Contractor is furnishing goods or services to UNICEF without specific permission of UNICEF.

33. CHILD LABOUR AND SEXUAL HARASSMENT

33.1 UNICEF fully subscribes to the Convention on the Rights of the Child and draws the attention of potential suppliers and contractors to Article 32 of the Convention which inter alia requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, spiritual, moral or social development. The Contractor represents and warrants that it does make use of child labour and that child labour will not be used in the performance of its obligations under this Agreement.

33.2 The Contractor or its personnel shall not tolerate, and shall not promote, by any means, sexual exploitation and sexual abuse of the local population (including the construction workers, refugees and other beneficiaries of assistance). The Contractor shall represent and warrant that it will take all necessary actions to avoid such activities and behaviour of persons involved in construction activities.

34. ANTI-PERSONNEL MINES

34.1 UNICEF supports an international ban on the manufacture of anti-personnel mines. UNICEF has decided not to purchase products from companies that sell or manufacture anti-personnel mines or their components. The Contractor represents and warrants that neither the Contractor nor any entity associated or affiliated with the Contractor is involved in the manufacture, distribution, or supply of anti-personnel mines.

35. AMENDMENT TO THE CONTRACT

35.1 No change, amendment or modification to the Works, Contract Price or time to completion will be accepted, or paid for, unless it has been agreed in writing between the Parties and has been incorporated in this Agreement through an amendment to this Agreement duly signed by the authorised representative of each Party.

36. NOTICES

36.1 Notices will be deemed to be effective as follows: in the case of personal delivery, on delivery; in the case of registered mail, seven (07) days; in the case of facsimiles, twenty four (24) hours following confirmed transmission.

36.2 Any notice, request or consent required or permitted to be given or made pursuant to this Agreement will be in writing, and addressed and sent by registered mail or facsimile to such Party as follows.

(a) **If to UNICEF:**

UNICEF, the United Nations Children's Fund
Km 3 Thadeua Road, Watnak Quarter

P. O. Box 1080, Vientiane, Lao PDR

Telephone: 315200 – 04; Fax: 314852;

Attn.: The Representative

with a copy to:

UNICEF, the United Nations Children's Fund
Copenhagen
tel: +45 35 27 35 27
fax: +45 35 26 94 21
Att: Director

(b) If to the Contractor:

…xxxxx (name and address of the Contractor)

……..

……..

……
Telephone: …….. Fax: ……..

37. EFFECTIVE DATE

37.1 The effective date of this Agreement shall be the date both Parties have signed the same.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be signed in their respective names on the date written below.

FOR AND ON BEHALF OF …..xxxxx (the Contractor)	FOR AND ON BEHALF OF UNICEF, the United Nations Children's Fund
……	……
Signature	Signature
Name of Official: ……..	Name of Official: …….
……..	……...
Date: ……	Date: ……..

.....xxxx....(Bank letter head).....

Date:..../..../.....

To: UNICEF Vientiane
P. O. Box 1080;
Km 3, Thadeua Road, Vientiane
Lao PDR.

Performance Guarantee No:...xxx...(by the concerned Bank)

We have been informed that ....xxxx....(Name of the Contractor)... (Hereinafter called the "Contractor") has entered into a contract agreement dated ....xxxx....(Date of signing the Contract) with you for the construction of .....xxxx (number of)... **School Buildings and ....xxx (number of)... Toilet-Water Units Contract Package Number** ....xxxx (the Contract number).. **in .....xxxx.. (district) of ...xxx(Province)...** (Hereinafter called the "Contract").

Furthermore, we understand that, according to the condition of the Contract, a performance guarantee is required from the Contractor.

At the request of the Contractor, we ....xxxx (Bank's name) hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ....xxxx (Amount of 30% or more / Amount of 10% or more of Contract price).... (...Amount in word...)... , such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This Guarantee will remain in force from ....xxxx (Date of issued the Guarantee) to ....xxxx (Date of completion of the Contract) (both date inclusive). Any demand in respect of this Guarantee should reach the Bank not later than the above date.

This Guarantee shall be returned to us upon its expiry or sooner determination.

For and on behalf of ....xxxx (Bank's name and address)

Authorised Signatories:

Signature:		Signature: .....
Name:		Name: .....
Position:		Position: .....

Annex 6: Maintenance Checklist								
TO DO	DAILY	WEEKLY	MONTHLY	½ YEAR	1 YEAR	3 YEAR	5 YEAR	Checked by
BUILDING								
Floors								
sweeping	X							
washing				X				
Inspect for bad cracking					X			
Walls & Pillars								
Cleaning/washing				X			X	
Re-painting							X	
Anti-termite treatment						X		
Pillars cracking						X		
Ceilings								
Cleaning				X				
Treatment against termites						X		
Re-painting							X	
Roof								
Cleaning					X			
Check rust on sheets						X		
Check ties holding roof to truss					X			
Roof truss								
Anti-termite treatment					X			
Check for cracking of timber beams						X		
Check that all joints are strong and secure			X					
Door and window shutters								
Tightening screws on hinghes					X			

TO DO	DAILY	WEEKLY	MONTHLY	½ YEAR	1 YEAR	3 YEAR	5 YEAR	Checked by
Check locks and keys				X				
Check door locks				X				
Furniture								
Chairs - strengthened					X			
Tables strengthened					X			
Re-paint black board						X		
Clean furniture by wiping dust/dirt away								
SANITATION								
Cleaning of ceramic ware	X							
Check water tank			X					
Check water supply				X				
Check door locks			X					
Repaint walls							X	
Clean septic tank						X		
Check buckets	X							
COMPOUND								
Clean rain ditch around building			X					
Check fencing			X					
Empty litter baskets	X							
Burn waste		X						
Cut grass			X					
Check sport facilities					X			

Example

Maintenance Implementation Chart

Nr.	Task / activity name	Responsible Level				Frequency						
		ECS	PUCDA	DEB	Village	daily	weekly	monthly	half yearly	yearly	every 3. year	every 5. year
1	**Floor**											
1.1	Sweeping					■						
1.2	Washing concrete floor								■			
1.3	Checking for cracks									■		
2	**Walls and Posts**											
2.1	Washing walls									■		
2.2	Checking termite attacks								■			
2.3	Repainting and anti termite treatment										■	
3	**Ceiling**											
	....											
	....											

Example

Date:.....

Repair Request Form

Nr:.....

Province: .....
District: .....
Village: .....
Stage: .....
Type of school: ☐2 Clr. ☒3 Clr. ☐5 Clr.
Completion date: .....

To the maintenance In-charge at:			From The maintenance In-charge at:		
	District Level	Mr.....		Village Level	Mr.....
	Province Level	Mr.....		District Level	Mr.....
Items to be repaired:		.....			
Location:		.....			
Description of Damage:		.....			
Proposed repair:		.....			
Priority:		.....			
Approximate Cost:		.....			

Comments by:			
	District Level	Mr.....	.....
	Province Level	Mr.....	.....

Works executed:	
Date:	Signatures of Maintenance In-charge:
	Village: ..... District:..... Province:.....

This School Construction Guidelines of Lao PDR was developed by the Division of Design and Construction Management (ECDM), Department of Finance, Ministry of Education with the assistance of the Asian Disaster Preparedness Center (ADPC), the United Nations Development Programme (UNDP), and with support from the European Commission Humanitarian Aid department (ECHO).