BIOLOGICAL ENVIRONMENT RESTORATION PROJECT

PLUIT RESERVOIR - JAKARTA, INDONESIA

DESIGN TEAM MEMBERS:
HARDY SUANTO
TRI APRILIANA

SUPERVISOR:
ALBERTUS PRAWATA ST.,M.Arch
MICHAEL ISNAENI DJIMANTORO ST., MT

ARCHIPRIX SEA 2012 NATIONAL UNIVERSITY OF SINGAPORE

C SYMBIOSIS HOUSE SYSTEM

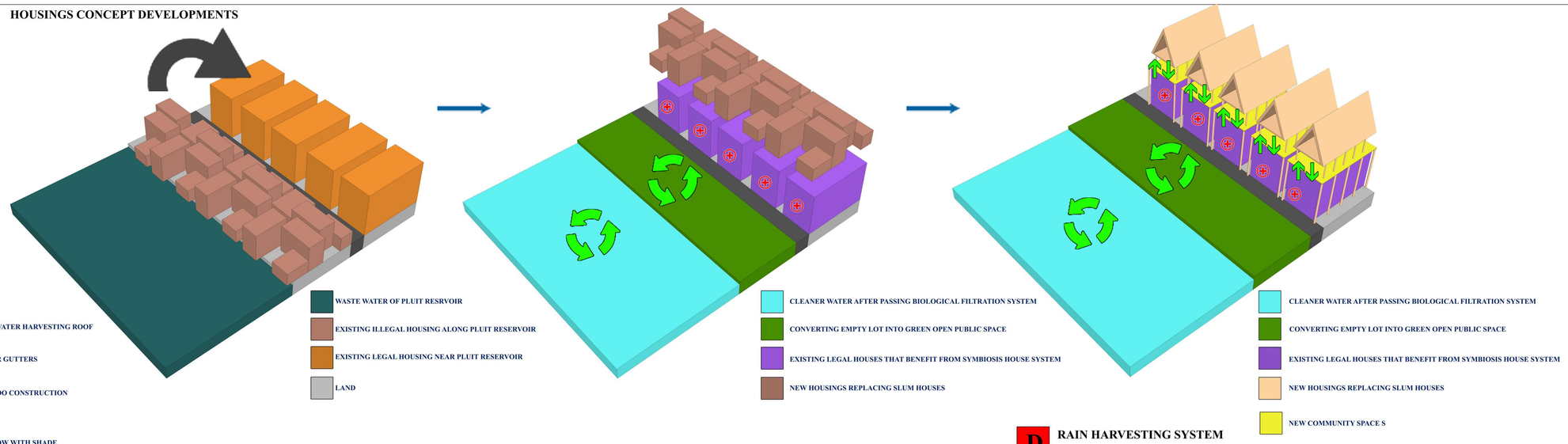
ALONG THE EDGE OF PLUIT RESERVOIR WAS AN EMPTY LOT ONCE, BELONGS TO THE GOVERNMENT. THIS LOT SERVES AND SUPPORTS THE RESERVOIR TO FUNCTION AS IT SHOULD BE. BUT DUE TO OVER POPULATION - PEOPLE FROM VILLAGES MOVED TO THE CITY IN OTHER TO WORK AT MUARA KARANG HARBOUR, DECIDED TO SETTLE DOWN ILLEGAL HOUSINGS ALONG PLUIT RESERVOIR.

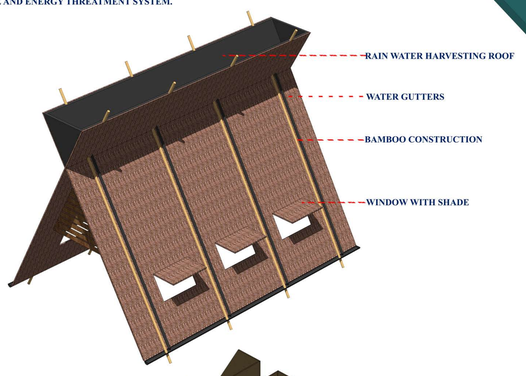
NOW, ALONG THE EDGE OF PLUIT RESERVOIR IS OVER POPULATED. MANY ILLEGAL HOUSES STAND ON THE EDGE OF RESERVOIR LAND AND SOME OF THEM OVER EXTENDED INTO THE RESERVOIR EVEN BUILD THEIR HOUSES ON THE RESERVOIR. THIS MATTER CAUSING THE UNSTABLE LAND ALONG THE EDGE OF THE RESERVOIR DECREASES ITS LEVEL EACH YEAR. ON THE OTHER PERSPECTIVE, HOUSES THAT WAS BUILT ON THE RESERVOIR DECREASES THE CAPACITY OF THE RESERVOIR.

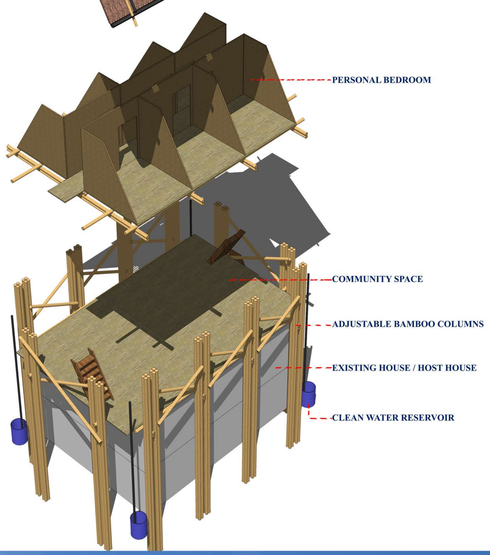
DUE TO UNTHREATED WASTES AND UNCONTROL POPULATIONS ALONG THE EDGE, HOUSINGS ALONG THE RESERVOIR TURN INTO SLUM HOUSES AND DESTROY THE BALANCE OF ITS ENVIRONMENT.

SYMBIOSIS HOUSE SYSTEM IS AN ELEVATED HOUSE CONCEPT WHERE A NEW HOUSE IS SITTED ON AN EXISTING LEGAL HOUSE TO SAVE THE LAND ALONG THE EDGE OF THE RESERVOIR. THE CONCEPT IS TO MOVE ALL OF THE EXISTING ILLEGAL HOUSINGS ALONG THE EDGE OF PLUIT RESERVOIR ONTO THE NEAREST EXISTING LEGAL HOUSING WITHOUT THREATEN OR DAMAGE ANY EXISTING LEGAL HOUSING. IN THE OTHER HAND, NEW HOUSINGS PROVIDE CLEAN WATER (WHICH IS VERY LIMITED IN THAT AREA) FOR ITS COMMUNITY AND EXISTING LEGAL HOUSING OR SO CALLED HOST HOUSE. AFTER THE RELEASING OF THE LAND ALONG THE EDGE OF THE RESERVOIR FROM SLUM HOUSINGS, THE LAND IS TURNED INTO AN OPEN GREEN SPACE AREA WITH GREENARY, WATER HARVESTING SYSTEM, COMMUNITY AREA, PUBLIC TOILET AND WASTE AND ENERGY THREATMENT SYSTEM.

HOUSINGS CONCEPT DEVELOPMENTS







ADAPTATION OF 5 POINT OF ARCHITECTURE OF LE CORBUSIRE INTO HUMID TROPICAL ARCHITECTURE CONCEPT

ROOF GARDEN > WATER HARVESTING ROOF

ALMOST ALL OF THE HOUSING ALONG THE EDGE OF PLUIT RESERVOIR DO NOT RECIEVE ANY CLEAN WATER SUPLY FROM GOVERNMENT, THEREFORE ALTERNATIVE CLEAN WATER SYSTEM SUCH AS RAIN WATER HARVESTING SYSTEM IS IMPORTANT TO ENSURE CLEAN WATER SUPLY MET ITS REQUIREMENT.

RIBBON WINDOW > WINDOWS WITH SHADES

HUMID TROPICAL AREA GAIN RAIN AND SUN HEAT DURING WHOLE YEAR. WINDOWS WITH CANOPY IS THE EBST SOLUTION TO PROTECT INTERIOR FROM RAIN WATER SPLASH AND DIRECT SUNLIGHT.

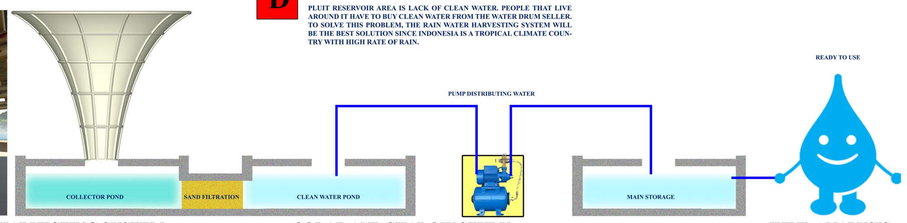
FREE PLAN + PILOTIS > APPLICATED ON DESIGN

THIS NEW HOUSING IS DESIGN TO STAND ON ITS HOST. FREE PLAN AND PILOTIS ENSURE THE FLEXIBILITIES OF COLUMN PLACEMENT SO THAT THE COLUMN CAN BE ADJUST TO MATCH THE GAP BETWEEN EXISTING HOUSES WHILE KEEPING THE HOUSE IN MODULAR MEASUREMENT. MODULAR MEASUREMENT OF THE HOUSE SIMPLIFY THE CONTRUSTION OF THE HOUSE.

COMMUNAL SPACE OF SYMBIOSIS HOUSES

D RAIN HARVESTING SYSTEM

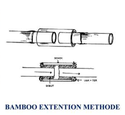
PLUIT RESERVOIR AREA IS LACK OF CLEAN WATER. PEOPLE THAT LIVE AROUND IT HAVE TO BUY CLEAN WATER FROM THE WATER DRUM SELLER. TO SOLVE THIS PROBLEM, THE RAIN WATER HARVESTING SYSTEM WILL BE THE BEST SOLUTION SINCE INDONESIA IS A TROPICAL CLIMATE COUNTRY WITH HIGH RATE OF RAIN.



MATERIALS AND CONSTRUCTION METHODE

BAMBOO IS CHOSEN AS THE MAIN MATERIAL FOR SYMBIOSIS HOUSE CONSTRUCTIONS BECAUSE OF IT'S STRENGHT AND FLEXIBILITY. BAMBOO CAN BE OBTAIN NEAR THE SITE. THERE ARE SOME LOCAL BAMBOO SELLER THAT BASED AT THE FRONT YARD OF THE SITE.

BAMBOO AND WOODS ARE THE PERFECT MATERIALS FOR THIS NEW HOUSE CONSTRUCTIONS BECAUSE OF THE LOCAL KNOWLEDGE WHERE PEOPLE IN THIS COMUNITY USED TO CONSTRUCT THEIR HOUSES USING BAMBOO AND WOODS SO THIS LOCAL CONSTRUCTION METHODE PLAYS AN IMPORTANT ROLES IN REALIZING THIS PROJECT.



BAMBOO EXTENTION METHODE

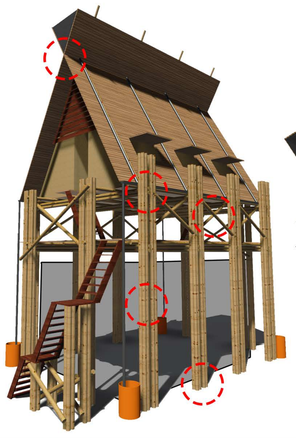
BAMBOO BONDING METHODE

BAMBOO JOINT

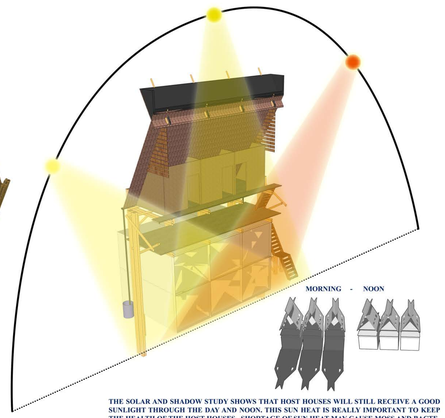
WOVEN MATERIAL FOR PARTITIONS AND RUMBIA FOR ROOF COVERING. THESE MATERIALS HAVE TRADITIONAL IDENTITY AND FAMILIARITY TO THE COMMUNITY OF PLUIT RESERVOIR. ON THE OTHER HAND, THESE MATERIALS HAVE LONG DURABILITY, EASY MAINTENANCE, LOW COST, ENVIRONMENTAL FRIENDLY, AND LIGHT WEIGHT.

BAMBOO CONSTRUCTION

WATER HARVESTING SYSTEM

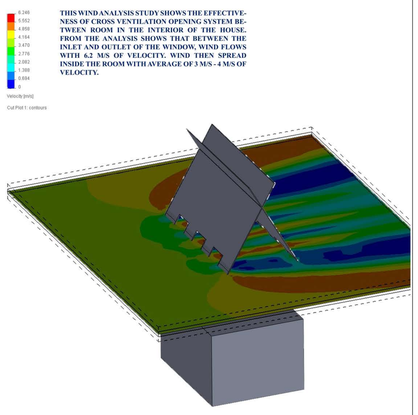


SOLAR AND SHADOW STUDY



THE SOLAR AND SHADOW STUDY SHOWS THAT HOST HOUSES WILL STILL RECEIVE A GOOD SUNLIGHT THROUGH THE DAY AND NOON. THIS SUN HEAT IS REALLY IMPORTANT TO KEEP THE HEALTH OF THE HOST HOUSES. SHORTAGE OF SUN HEAT MAY CAUSE MOSS AND BACTERIA TO GROW ON HOST HOUSE.

WIND ANALYSIS



THIS WIND ANALYSIS STUDY SHOWS THE EFFECTIVENESS OF CROSS VENTILATION OPENING SYSTEM BETWEEN ROOM IN THE INTERIOR OF THE HOUSE. FROM THE ANALYSIS SHOWS THAT BETWEEN THE INLET AND OUTLET OF THE WINDOW, WIND FLOWS WITH 6.2 M/S OF VELOCITY. WIND THEN SPREAD INSIDE THE ROOM WITH AVERAGE OF 3 M/S - 4 M/S OF VELOCITY.

REJUVENETED LOT THAT HAS BEEN CONVERTED INTO COMMUNAL OPEN SPACE