

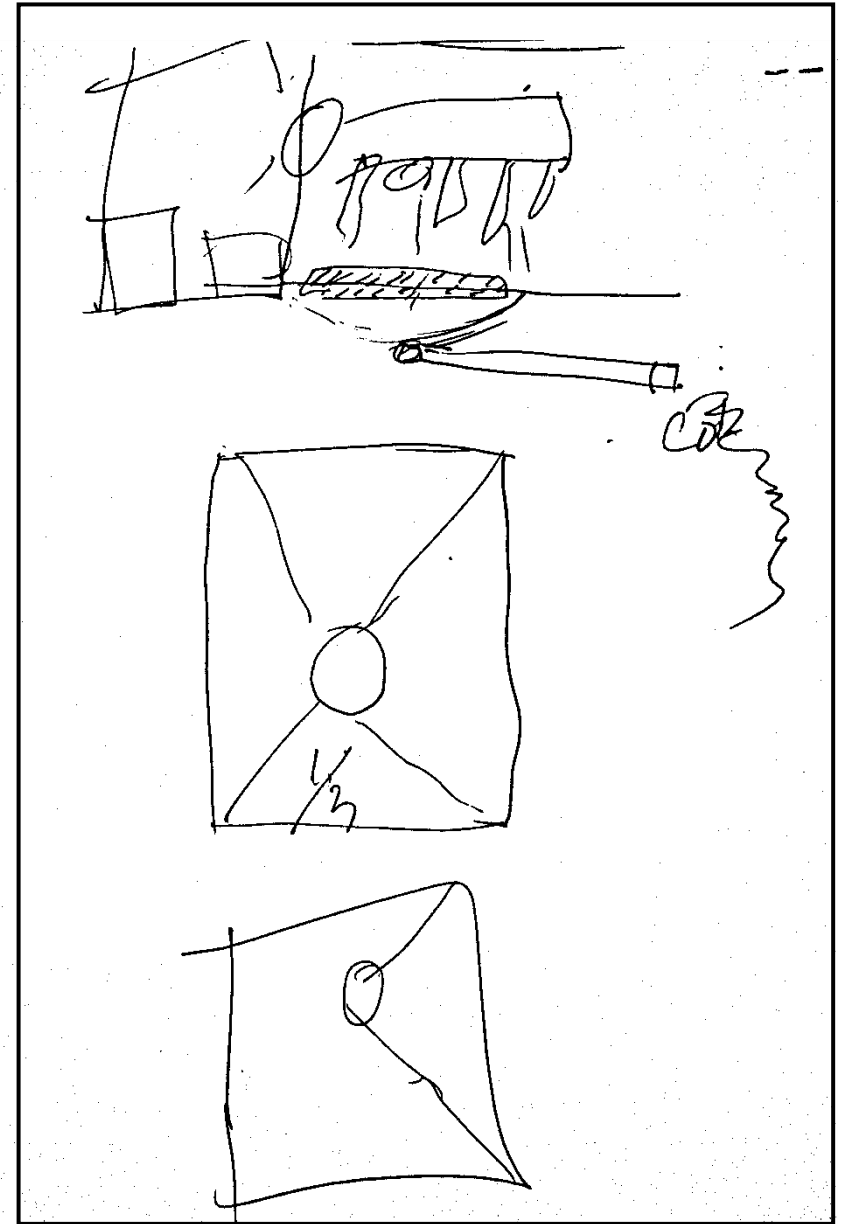
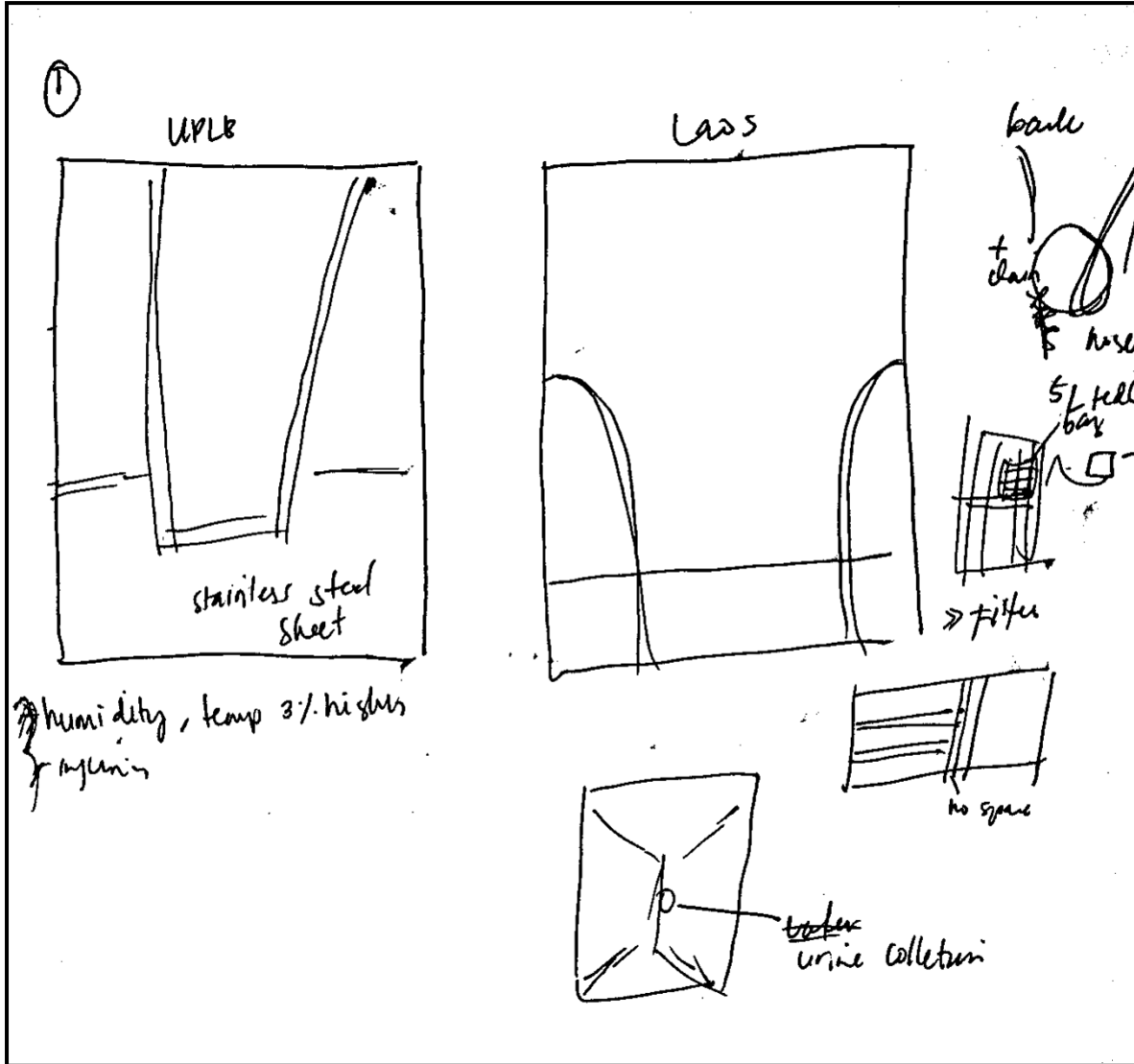
HEADBOXES: CHALLENGES with SOLUTIONS

(Experiences of users, from Headbox Workshop, held Phnom Phen, May 2025)

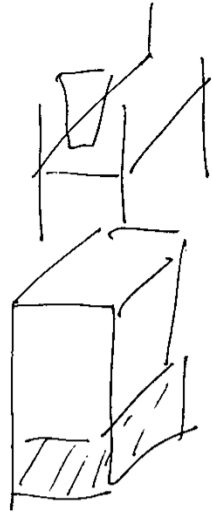
ISSUE	CHALLENGE	SOLUTION
STRUCTURAL		
Old met crates, repurposed	Some injuries to animals	Smooth surfaces, use rubber matting & padding
Met crates high	Loading difficult	Lower met crates as much as possible; use ramps, pallets, bags, or trolleys
Concrete met crates	Not flexible but suitable for long-term housing; matting needed	
Metal met crates	Flexible but difficult for long-term housing, so training essential; matting needed	
Hood constrictive	Animals hot, isolated	Make 'funnel' wide and shallow, with clear material or inserts
OPERATIONAL		
High relative humidity	Condensation in HB & lines	Install dehumidifiers, increase air flow rate
High temperature	Animals off-feed & agitated	Install bigger fans, increase air flow
Dust entering ducting	Clogging, equipment issues	Instal air filters, clean regularly
Leakage in ducting	Recovery rates low	Check regularly
Faeces in urine	Contamination for Total Collection	Regular/instant collection of faeces; matting, grates, good drainage
ANIMALS		
Cattle wild temperament	Hard to train, damage to HB	Persist with training, improve restraints (adjustable back rails, collar)

Cattle not trained	Restless in HB, go off feed	Lure into HB with fresh feed; have door open; gradually increase time in HB
Cattle restless in hood	Can't see other animals	Use some/all transparent material so animals can see each other
Animals vary in size	Hard to restrain	Use adjustable rails, tethers, chains
Cattle small	Can't lie down comfortably	Design back of head box with lower bar or cut it out
Animals with horns	Damage to HB	Dehorn well before trial, use younger animals,
Small herd available	Limited replication	Use Latin-square with covariate 'wash-out' period; block as much as possible
FEED & WATER		
Feed supply unreliable	Difficult to maintain quality	Contract with reliable farmers; use silage; store on site when possible
Bulky feed	Too much to feed once/day in HB	Feed twice/day, discard data from the period when doors are opened
Reaching all feed	Feed trays too deep, corners	Curved (1/2 drum) or circular feed trays; lengthen hood 'funnel'; loosen tether
No reticulated water	Need self-watering in headboxes	Install header tank for gravity fed water to individual troughs
Water slashed into feed	Feed wastage, DMI compromised	Install water lower than or far from feed tray, or block between them
Water splashed into HB	Increased humidity	Small drainage holes can be drilled where water pools
OTHER		
Electricity unreliable	Suffocation of animals	Safety doors installed; staff on-site always; alarm if power fails; generator
Security of equipment	Theft always possible	Lock gear in fixed metal cages or trolleys; students living on-site; lock gates

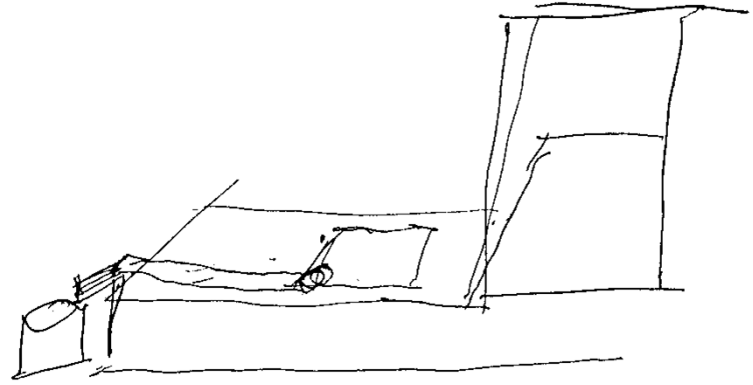
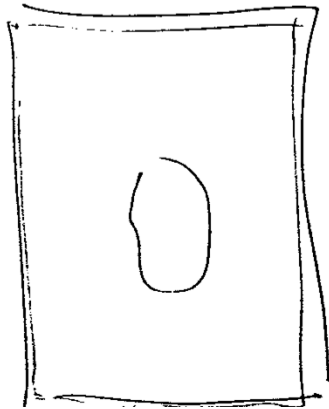
HEADBOX: STRUCTURE of HEADBOX ENTRANCE with HOOD design + METABOLISM CRATE DESIGN



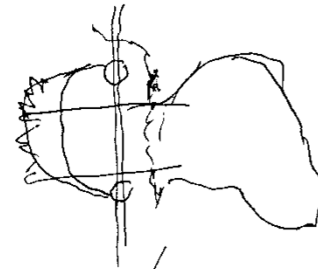
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2 Nested tables



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