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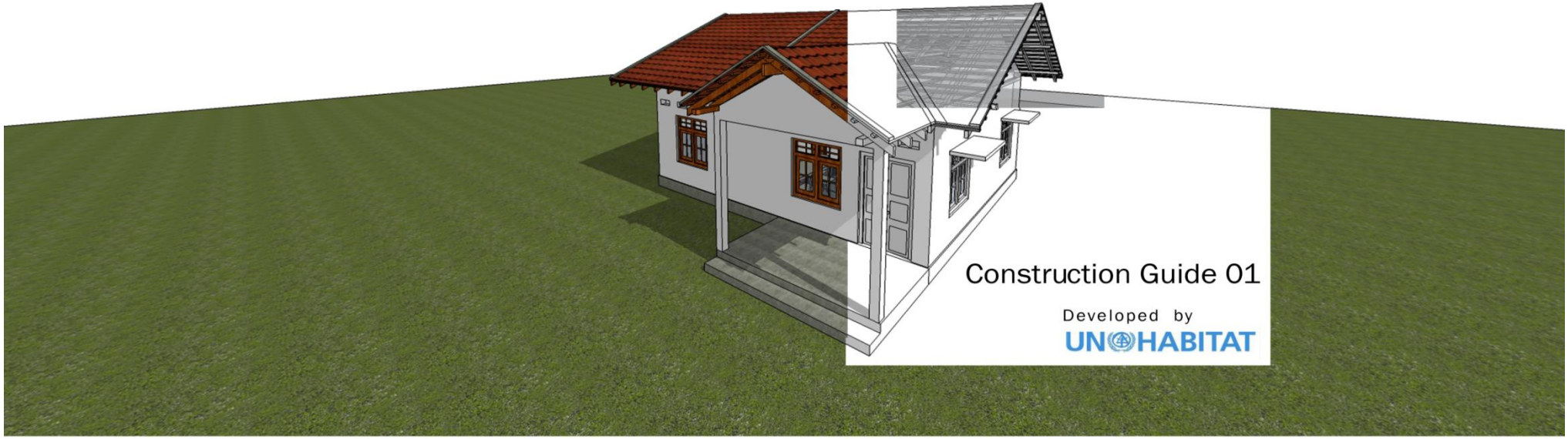

Construction Guide 01

Developed by

UN HABITAT

सत्यमेव जयते

INDIA

India-Sri Lanka Friendship

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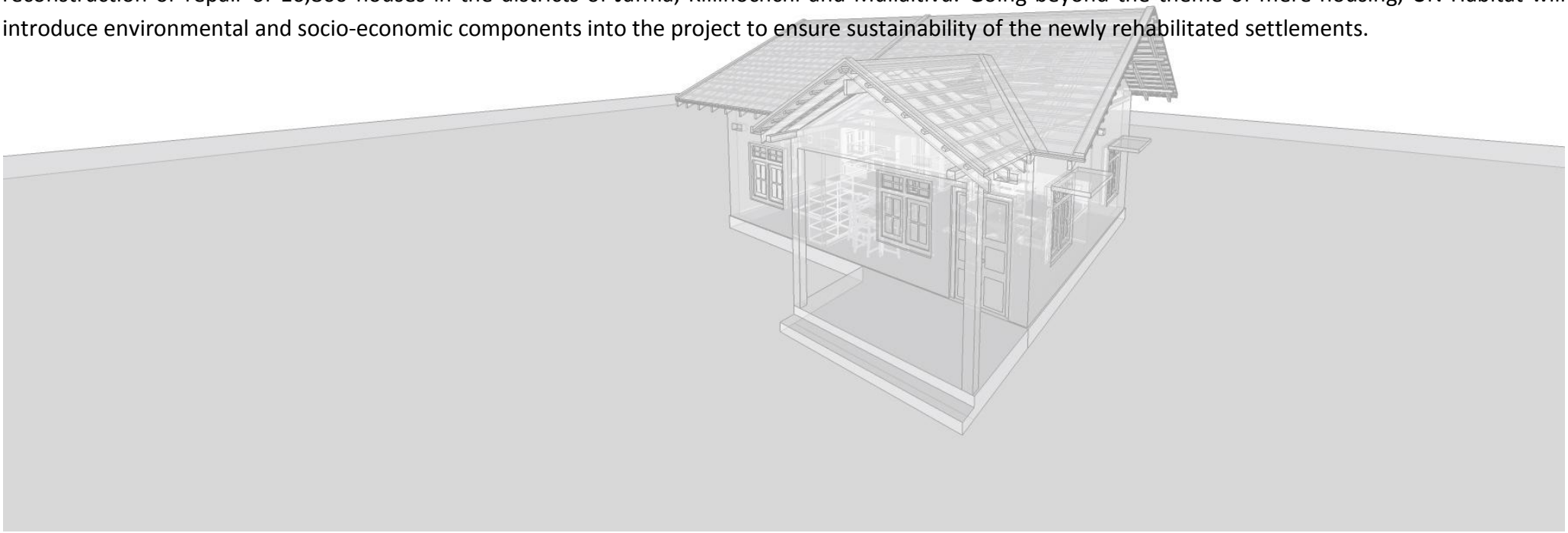
BACKGROUND

The Indian Housing Project for construction and repair of 43,000 housing units in the Northern and Eastern Provinces of Sri Lanka is a part of the overall commitment of 50,000 houses announced by the Government of India (GoI) in June 2010. This Project aims to contribute to the sustainable rehabilitation of Internally Displaced Persons (IDPs) and reconstruction in the Northern and Eastern Provinces of Sri Lanka. It primarily supports people who have been displaced as a result of the conflict to re-build their houses. This Project is implemented under the parameters of the Memorandum of Understanding signed between the Government of India and the Government of Sri Lanka on 17th January 2012. The 36 month project will be implemented from mid 2012 until mid 2015.

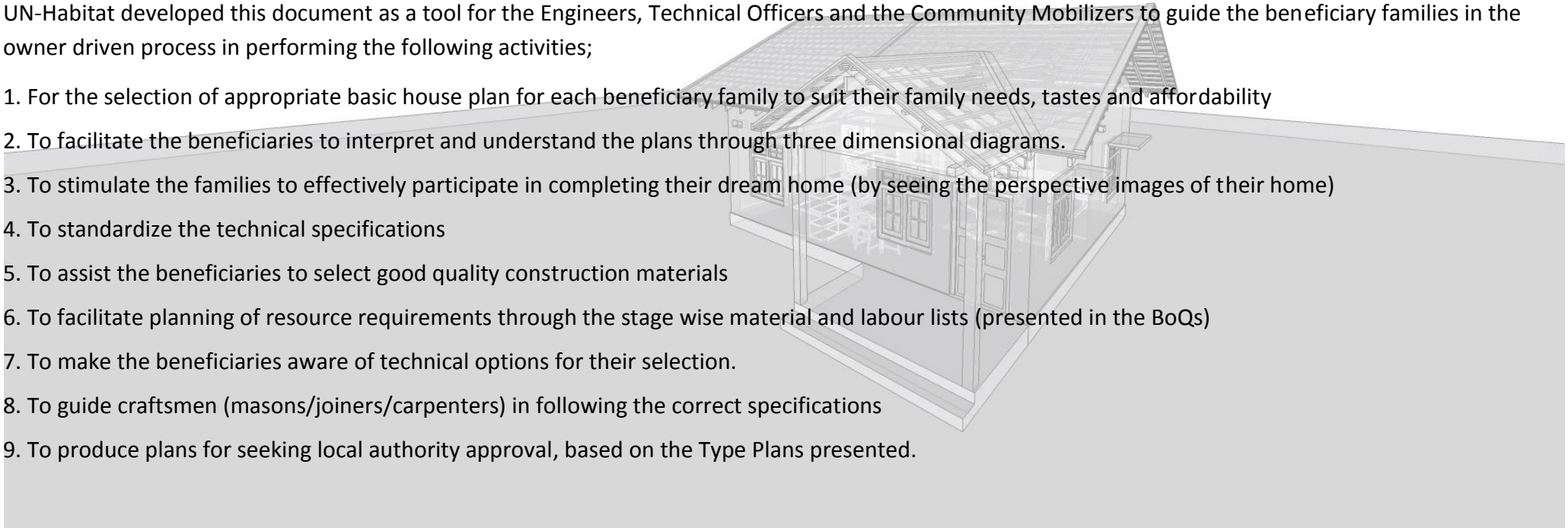
The GoI appointed UN-Habitat as one of the four Implementing Agencies (IA) of the project. The other IAs are; International Federation of Red Cross and Red Crescent Societies (IFRC) acting in partnership with Sri Lanka Red Cross Society (SLRCS), National Housing Development Authority (NHDA) and Habitat for Humanity Sri Lanka (HFHSL). The Project envisages construction of new houses and repair of damaged houses, through the involvement of owner-beneficiaries in the process of construction, and release of cash grants directly into their bank accounts. UN-Habitat is responsible for supporting the reconstruction or repair of 16,800 houses in the districts of Jaffna, Killinochchi and Mullaitivu. Going beyond the theme of mere housing, UN-Habitat will introduce environmental and socio-economic components into the project to ensure sustainability of the newly rehabilitated settlements.



INTRODUCTION

This Construction Guide-01 is a collection of technical documents specific to the Indian Housing Project, which will serve as a ready reckoner for the technical staff providing technical assistance to the beneficiary families. It consists of Technical Specifications and Guidelines, Beneficiary Guidelines, five 'Type Plans' for houses and plans for toilets, approved by the Indian High Commission. Bill of Quantities for each type plan is included. As a safeguard towards ensuring the quality of materials, an extract from the Sri Lanka Standards for common building materials and local timber classification are presented. The Instructions on Setting out and Foundation Laying are included to eliminate some flaws observed in the previously concluded projects. The guide also includes a design for smoke free, low cost kitchen chimney and a typical domestic rainwater harvesting system, which are external to the compulsory elements of the housing project but complementary to the sustainability. The 'Type Plans' have been developed by the UN-Habitat technical staff reflecting traditional designs prefferd by the people in the Northern districts, extracted through their experience in implementing several housing programmes in the past (EU and AusAID projects). The beneficiaries enjoy the freedom of selecting and amending these plans to suit their specific needs, tastes and affordability, while keeping to the minimum specifications defined under the Technical Specifications. Technical staff of UN-Habitat will offer the required technical advisory in effecting such design changes, in addition to the routine construction supervision and progress monitoring.

UN-Habitat developed this document as a tool for the Engineers, Technical Officers and the Community Mobilizers to guide the beneficiary families in the owner driven process in performing the following activities;



1. For the selection of appropriate basic house plan for each beneficiary family to suit their family needs, tastes and affordability
2. To facilitate the beneficiaries to interpret and understand the plans through three dimensional diagrams.
3. To stimulate the families to effectively participate in completing their dream home (by seeing the perspective images of their home)
4. To standardize the technical specifications
5. To assist the beneficiaries to select good quality construction materials
6. To facilitate planning of resource requirements through the stage wise material and labour lists (presented in the BoQs)
7. To make the beneficiaries aware of technical options for their selection.
8. To guide craftsmen (masons/joiners/carpenters) in following the correct specifications
9. To produce plans for seeking local authority approval, based on the Type Plans presented.

SECTION 1 : TECHNICAL GUIDELINES

TECHNICAL SPECIFICATIONS FOR HOUSE CONSTRUCTION AND REPAIR

1.Introduction

The beneficiaries will be provided with financial and technical assistance to construct new houses in lieu of the destroyed houses or repair partly damaged houses. The grant amount allocated for one newly constructed house is Rs. 550,000/, and for a house to be repaired a maximum of Rs.250,000. The funds are released to the beneficiaries in instalments, according to the progress of construction.

The plinth area of a newly constructed house should not be less than 550 sq.ft. Several Type Plan options are made available to the beneficiaries to select a suitable plan of their choice. A standard priced BoQ, presented on page 17, is based on one Type Plan with a plinth area of 550 sq.ft. This BOQ is prepared on the basis of **'Lockable House'**; meaning that the grant amount is sufficient to complete a safely lockable house with all external doors and windows made lockable. Only very basic finishes are provided under this BOQ to limit the expenses within the grant. Yet, the beneficiaries are allowed to choose a plan with bigger floor area or expand the type plans, but they have to agree to undertake funding of the amount in excess of the grant.
The grant amount for repair houses varies with the extent of work involved in bringing the house to habitable state, subject to the maximum limit stipulated above.

Specifications for house construction and repair

The project specifications described in the following sections are based on the following national building specifications and standards;

1. UDA/Local Authority planning regulations
2. Specifications for Building Works – Volume 1, Published by Institute for Construction Training and Development, Sri Lanka.
3. Specifications for Building Works – Volume 2, Published by Institute for Construction Training and Development, Sri Lanka.
4. Specifications for Water Supply Sewerage and Storm Water Drainage Works, Published by Institute for Construction Training and Development, Sri Lanka.
5. All relevant standards published by Sri Lanka Standards Institution.
6. Building Schedule of Rates, Published by Institute for Construction Training and Development, Sri Lanka.

7. Disaster risk reduction guidelines published by Disaster Management Centre/NHDA/Institute of structural Engineers.

Any building material not covered by the above must satisfy the standard requirements of an equivalent material. The use of cost effective and/or green building materials and methods are encouraged, subject to beneficiary acceptance. As some newly developed green building materials may not be covered by the above standards, such materials with proven use in other countries may be used with the agreement with the UN-Habitat technical officers. Some general guidelines for construction are provided in the following sub sections.

2.Foundation

A design of the foundation shall be carried out to determine the width and depth. Consideration shall be given to local conditions. A plinth beam is normally not required but where expansive soil or soft ground is found (and in Tsunami prone areas) a plinth beam shall be provided. When rebuilding over the foundation of a house, of which the super structure is destroyed, a plinth beam shall be provided. Foundation should be raised to a minimum height of 1 foot above the surrounding ground. In flood prone areas, it should be raised above the known flood level (height).

A screed of 75mm thick 1:3:6 (38 mm) (1 ½ inches) concrete should be provided, underneath the masonry strip foundation. The course aggregate used in this screed concrete, i.e; 38mm metal may be substituted by hard and durable building debris up to 30% of its quantity.

The use of random rubble, limestone, clay bricks, solid cement sand bricks/blocks or concrete is preferred for foundations. The random rubble /limestone masonry shall be built with 1:6 cement: sand mortar. The clay bricks should have a minimum of 2.8N/mm^2 compressive strength (as per SLS 39) and should be built with 1:6 cement: sand mortar. Cement bricks (not exceeding 337.5 mm in length, 225.0 mm in width or 112.5 mm in height) too should have a minimum compressive strength of 2.8 N/mm^2 (SLS 847). The solid cement: sand blocks, of which the length is 390mm or more and height is 140mm or more, should have minimum of 1.2N/mm^2 (as per SLS 855) compressive strength and should be built with 1:8 cement: sand mortar.

Hollow or cellular blocks are not recommended for foundation construction. For each and every case, the technical officer will decide the depth of the foundation, which will not be generally less than 18”. A Damp Proof Course (DPC) over the top surface of the foundation shall be laid to a thickness of 20mm, with 1:2 cement mortar, top surface coated with bitumen/tar (2 coats) and blinded with sand to prevent dampening of walls during rainy season or due to high ground water level.

Before construction, quality of the materials must be checked and certified by the Technical Officer.

3.Walls/ Superstructure

Clay Bricks, cement: sand bricks/blocks (Solid, hollow or cellular), or stabilised soil blocks are the preferred types of building material for the superstructure. The strength requirements of these materials are given in the above section on 'Foundation'.

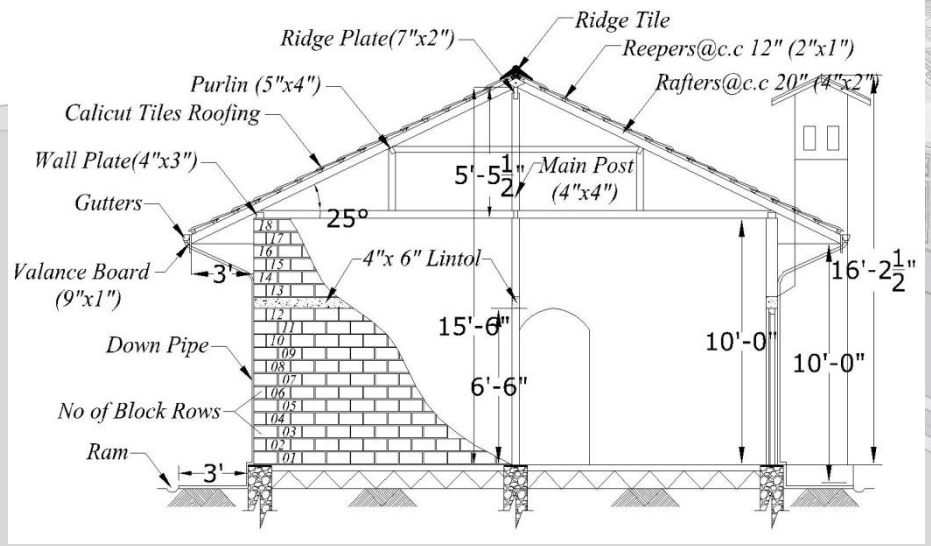
A ring beam at lintel level, to a depth of 100mm (4 inches), reinforced with 2, 10mm steel bars shall be provided over all the external walls and lateral centre wall.

Minimum thickness of external walls shall be 150mm (6 inches) and of internal walls 100mm (4 inches)

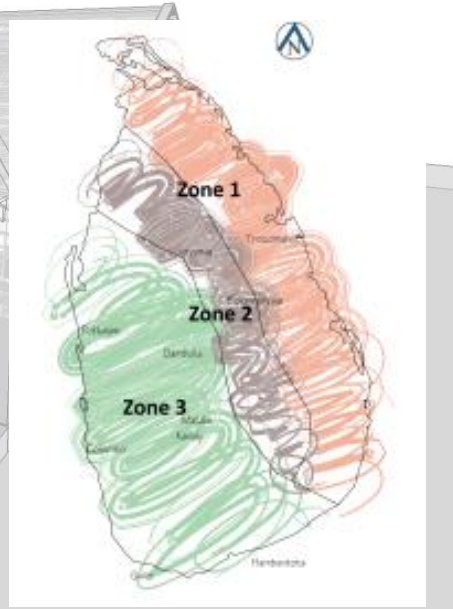
150 mm thick external walls shall be constructed with 1: 8 cement sand mortar and 112mm thick internal walls with 1:5 cement: sand mortar (applicable to both clay and cement sand bricks).

Compressed Stabilized Soil Blocks (CSEB) shall contain a minimum of 5% cement and should have more than 2.8N/mm^2 dry compressive strength; wetting and drying shrinkage should be less than 0.1%. CSEB walls shall be constructed with 1: 3: 3 cement: soil: sand mortar. For stabilized soil blocks, requirements given in SLS1382 shall be satisfied.

4.Roof



Typical Cross Section showing roof elements



Wind Zoning Map

The roof shall be designed for the wind resistance requirements of Zone 1 (a wind speed up to 176km/hr) and Zone 2 (a wind speed up to 153km/hr). A tile roof or sheet roof shall have an appropriate slope.
The roof structure could be steel, appropriate timber (density more than 640 kg/m3 at 12% moisture content or chemically treated timber by pressure impregnation) , coconut rafters or Palmira rafters. All untreated timber should be applied with two coats of wood preservatives.

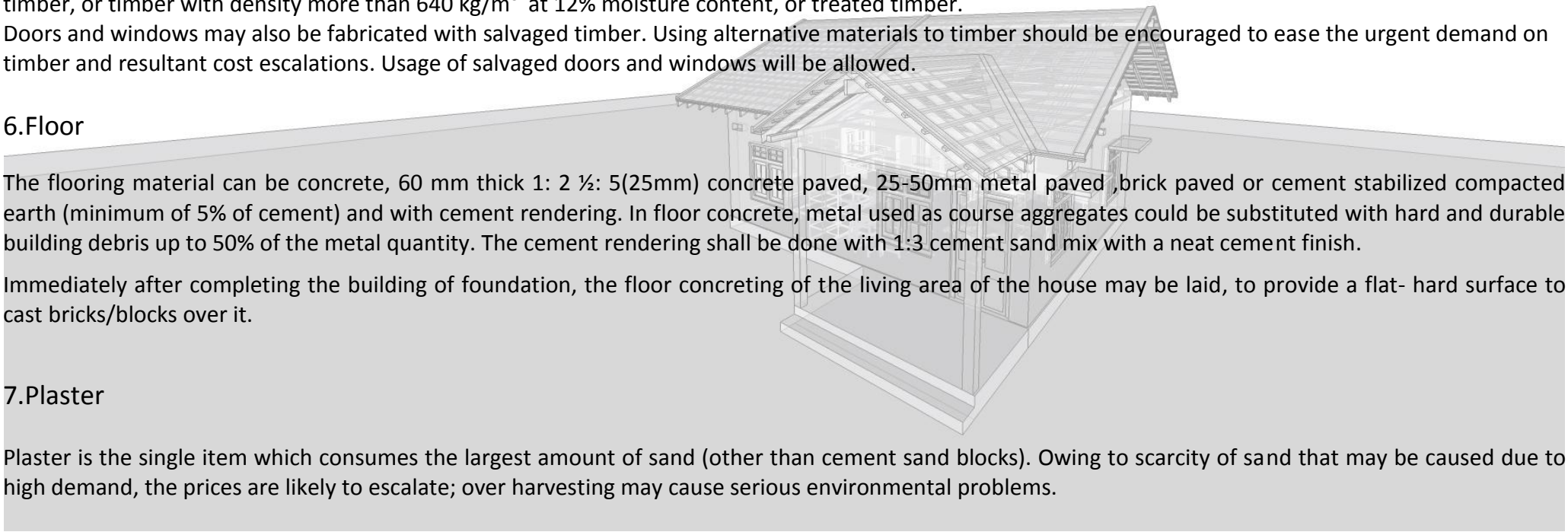
Proper anchoring for uplift due to wind shall be provided. Roof structure should be properly anchored to the walls up to the depth of the ring beam of wall, in order to prevent being blown off due to high winds. Higher roof slopes will increase the resistance to withstand strong winds and a minimum gradient of 25^0 should be maintained.

Roof cladding should be clay tiles or any other cladding type (except asbestos) approved by the TO.

Salvaged timber and tiles will be allowed to be used provided they are of acceptable quality.

5.Doors and Windows

Door and window frames and sashes can be appropriate timber, pre-cast concrete, aluminium, uPVC or steel. If timber is used, it must be of class 1 quality timber, or timber with density more than 640 kg/m^3 at 12% moisture content, or treated timber.
Doors and windows may also be fabricated with salvaged timber. Using alternative materials to timber should be encouraged to ease the urgent demand on timber and resultant cost escalations. Usage of salvaged doors and windows will be allowed.



6.Floor

The flooring material can be concrete, 60 mm thick 1: 2 ½: 5(25mm) concrete paved, 25-50mm metal paved ,brick paved or cement stabilized compacted earth (minimum of 5% of cement) and with cement rendering. In floor concrete, metal used as course aggregates could be substituted with hard and durable building debris up to 50% of the metal quantity. The cement rendering shall be done with 1:3 cement sand mix with a neat cement finish.

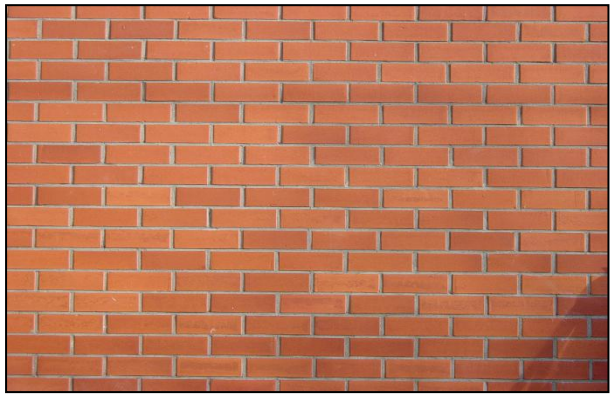
Immediately after completing the building of foundation, the floor concreting of the living area of the house may be laid, to provide a flat- hard surface to cast bricks/blocks over it.

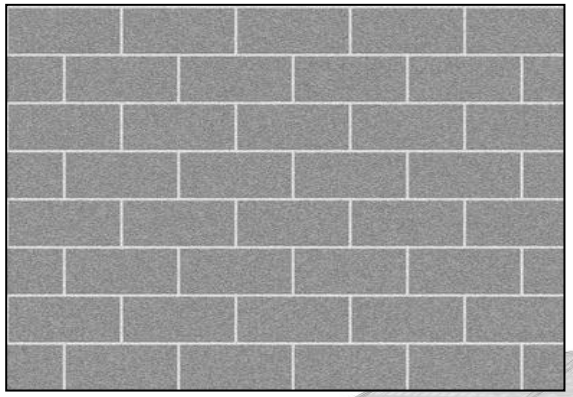
7.Plaster

Plaster is the single item which consumes the largest amount of sand (other than cement sand blocks). Owing to scarcity of sand that may be caused due to high demand, the prices are likely to escalate; over harvesting may cause serious environmental problems.

Therefore it is recommended to reduce plastered walls by applying alternative architectural finishes, such as exposed brick/block walls with plaster bands (Architraves) at edges and door/ window reveals (can be painted with low cost cement based paint or mud paint). However, one room, kitchen and the living area, and in addition internal walls of the toilet up to a height of 3 ft are required to be plastered as a minimum. Plaster in the other internal walls can be completed afterwards, allowing for an incremental building process.

Usage of sand can also be reduced by using earth based plaster. In Earth based plaster, mixing ratio of cement: sand: soil is to be decided at site, by conducting trial mixtures to suit the soil type (approximate ratio 1:3:3).





Un-plastered brick walls

Un-plastered walls with plaster bands (architraves) along edges

General specifications to follow in plastering are as follows;

The foundation plinth plaster shall be 1:3 cement sand mortar with a neat cement finish 16mm thick.

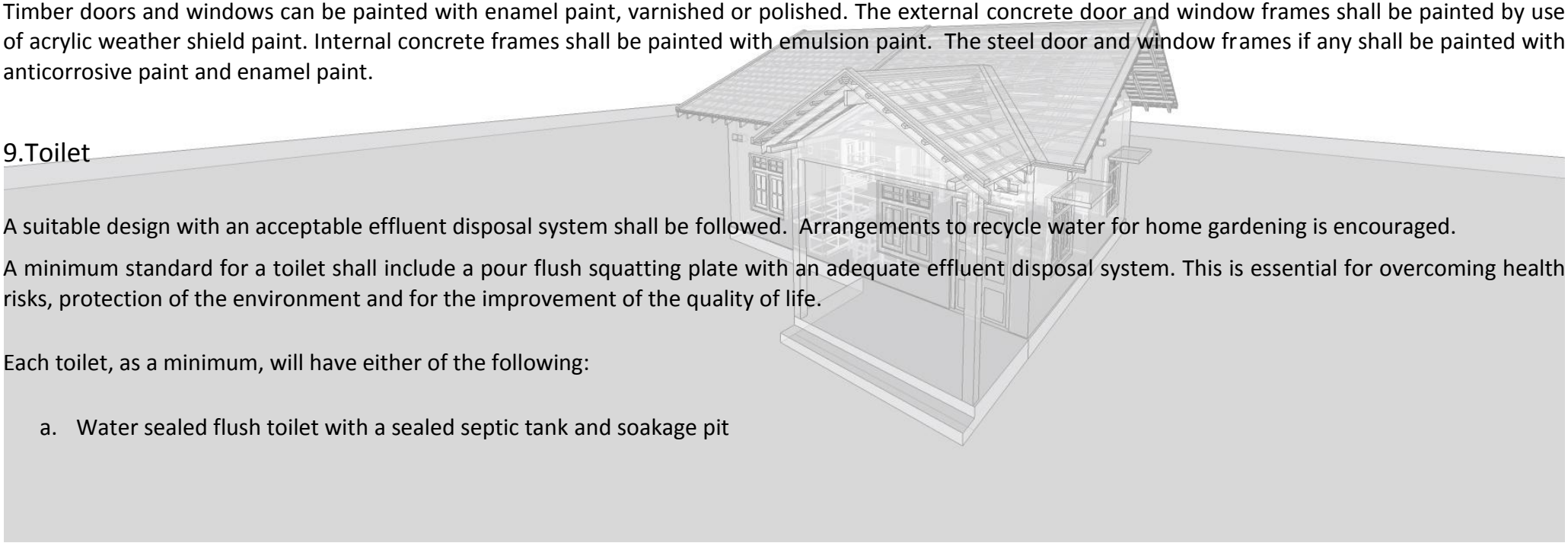
The brick or cement brick/block walls could be plastered with 1: 5 cement: sand plaster. The brick/block walls may also be plastered with 1:3:3 cement: soil: sand plaster. The soil blocks walls shall be plastered with 1:3:3 cement: soil: sand plaster.

The thickness of all plasters shall be not less than 12mm for internal surfaces and 16mm for external surfaces. The internal plaster can be smoothened by floating lime putty or wall putty. Sand can be replaced with quarry dust for up to 50% of requirement.

8.Painting (Optional)

Painting of walls can be done by use of lime or lime: cement (1:1). Soil block walls can be painted with lime: cement: soil (1:1:0.25) mixture added with a binder gum (Ex; Chemifix) and powdered soap. Colour pigments may be added as desired.

Timber doors and windows can be painted with enamel paint, varnished or polished. The external concrete door and window frames shall be painted by use of acrylic weather shield paint. Internal concrete frames shall be painted with emulsion paint. The steel door and window frames if any shall be painted with anticorrosive paint and enamel paint.



9.Toilet

A suitable design with an acceptable effluent disposal system shall be followed. Arrangements to recycle water for home gardening is encouraged.

A minimum standard for a toilet shall include a pour flush squatting plate with an adequate effluent disposal system. This is essential for overcoming health risks, protection of the environment and for the improvement of the quality of life.

Each toilet, as a minimum, will have either of the following:

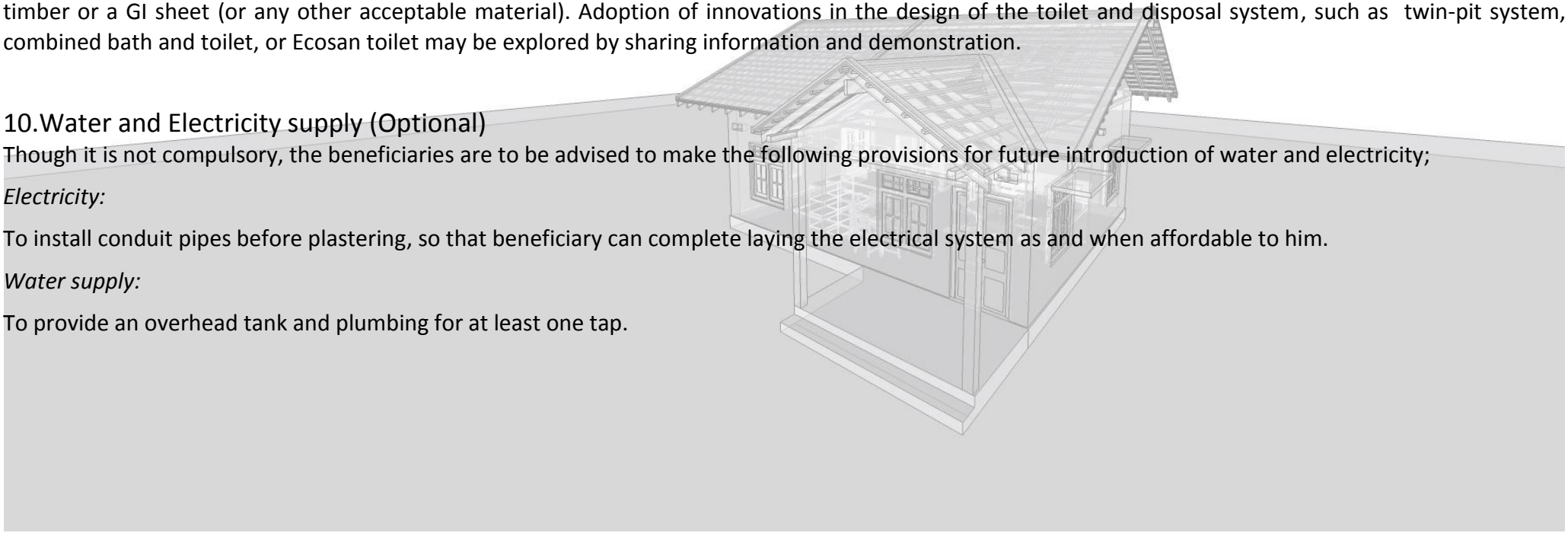
a. Water sealed flush toilet with a sealed septic tank and soakage pit

The soakage pit should have sufficient elevation above the water table to permit ready soakage. In flood prone areas the toilet should be sufficiently elevated. In areas where ground water table is high, the toilet should be elevated. Septic tank should be so located that it has easy access to a gully sucker for emptying the septic tank when necessary (Particularly in urban areas).

b. Water sealed flush toilet with a cess pit (single pit)

Cess pit is a single pit which collects excreta and flush water together, in the same pit. This system is only recommended for lands of extent more than 40 Perches, and where a distance of not less than 50ft can be maintained between the well and the cess pit . A circular pit would be more stable than a square/ rectangular pit. A hard cover slab out of concrete shall be provided. The top two feet depth of the pit should be built round with brick/solid block masonry and be raised 6 inches above the ground in order to provide support to the concrete cover slab. The elevation above the ground should be increased in flood prone areas. **Cess pits are not permitted within the Jaffna Peninsula due to fragile sub surface conditions**.

The superstructure of the toilet will be completed with any material specified for walls (min 4" thick) with sufficient ventilation, roof work using clay roof tiles, corrugated GI sheet or concrete slab, internal plastering (up to a height of 3 ft), floor concreting and rendering, and a door. The door can be made with timber or a GI sheet (or any other acceptable material). Adoption of innovations in the design of the toilet and disposal system, such as twin-pit system, combined bath and toilet, or Ecosan toilet may be explored by sharing information and demonstration.



10.Water and Electricity supply (Optional)

Though it is not compulsory, the beneficiaries are to be advised to make the following provisions for future introduction of water and electricity;

Electricity:

To install conduit pipes before plastering, so that beneficiary can complete laying the electrical system as and when affordable to him.

Water supply:

To provide an overhead tank and plumbing for at least one tap.

SITE SPECIFIC TECHNICAL REQUIREMENTS

The plans and the resource requirements outlined in this guide will need adaptation to specific conditions of the individual sites. It is the responsibility of UN-Habitat field technical staff to advice the beneficiary families and make necessary amendments to the plans and BoQs, on such specific situations. The main areas that may need specific technical attention are:

1. Location of the house within the plot needs to account for the Local Authority requirements, topography, surface water drainage, soil conditions and the proper orientation in terms of Disaster Risk Reduction (DRR) and other relevant requirements.

2. Location of the toilet pit needs to be further away than stipulated minimum from the well.

3. Plinth level considering flood level.

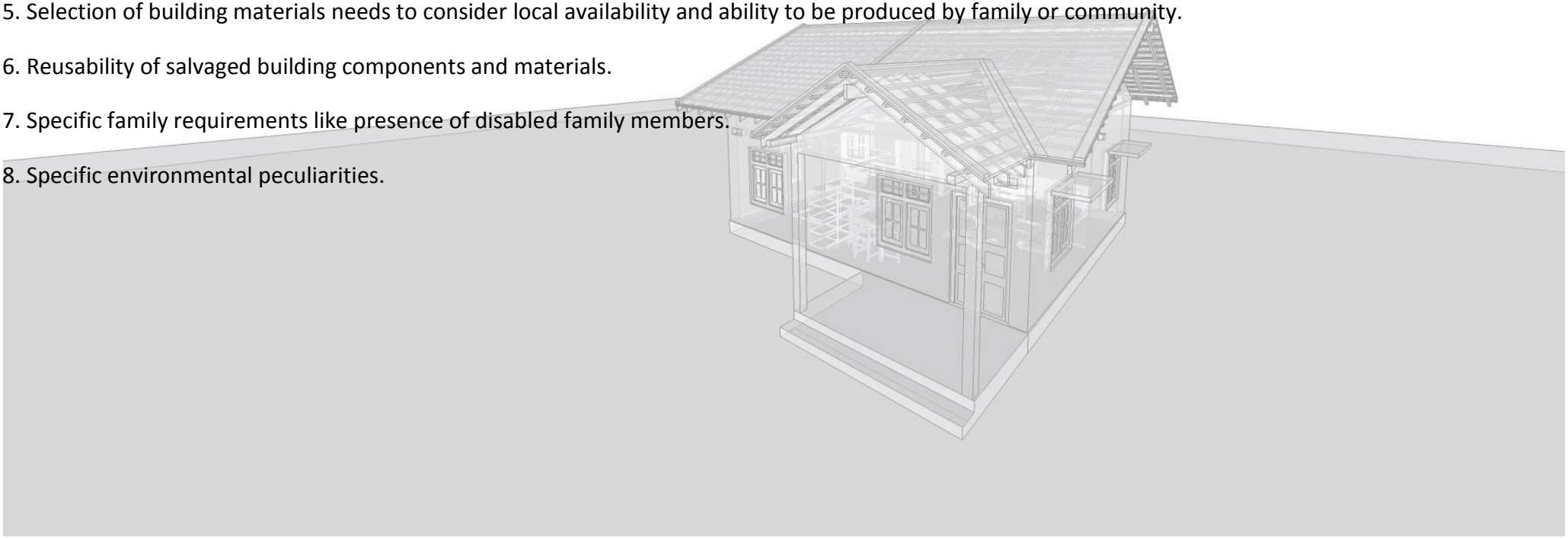
4. Disaster resilience features appropriate for the area/location.

5. Selection of building materials needs to consider local availability and ability to be produced by family or community.

6. Reusability of salvaged building components and materials.

7. Specific family requirements like presence of disabled family members.

8. Specific environmental peculiarities.



TECHNICAL GUIDELINES FOR BENEFICIARIES

1.0. Details of grant entitled to each beneficiary family:

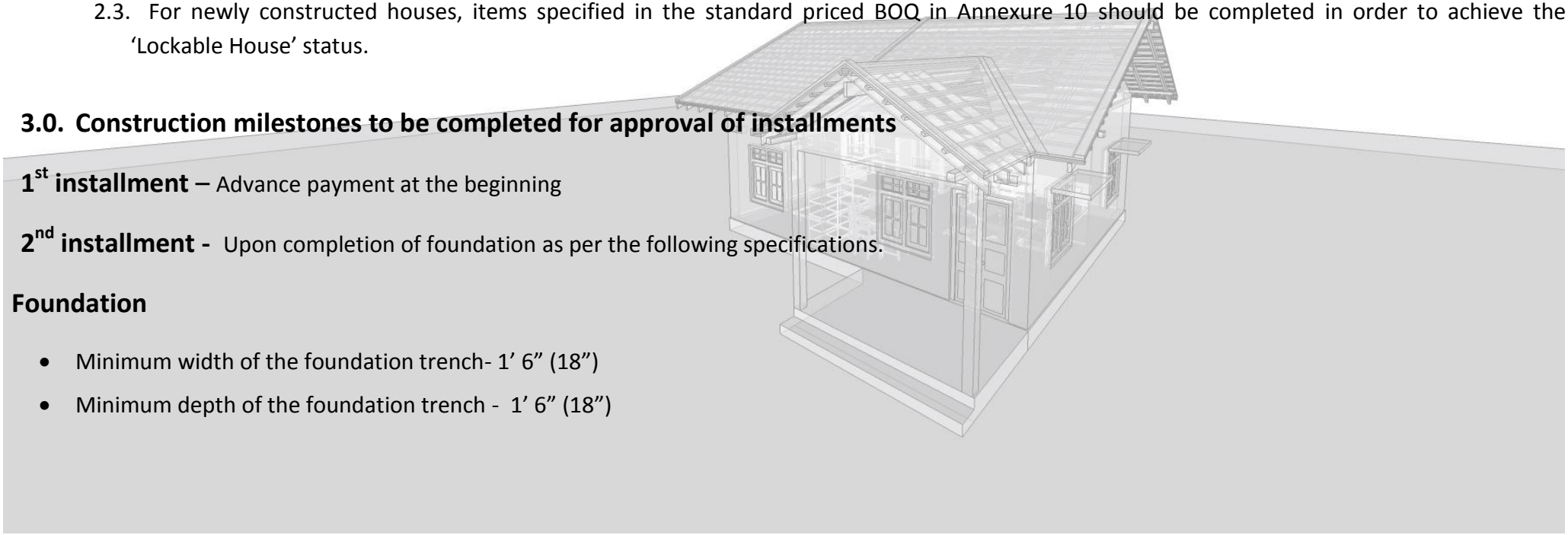
Details of Installments	New Construction	Repair
1st installment	Rs.100,000.00	40% of estimated amount
2nd installment	Rs.200,000.00	50% of estimated amount
3rd installment	Rs.200,000.00	10% of estimated amount
4th installment	Rs.50,000,00	-

2.0. The minimum requirements for the house to be complete / repaired

2.1. The plinth area of the house shall not be less than 550 sq.ft.

2.2. The house should consist of two bedrooms, hall kitchen and an attached or detached toilet conforming to local building regulations.

2.3. For newly constructed houses, items specified in the standard priced BOQ in Annexure 10 should be completed in order to achieve the 'Lockable House' status.



3.0. Construction milestones to be completed for approval of installments

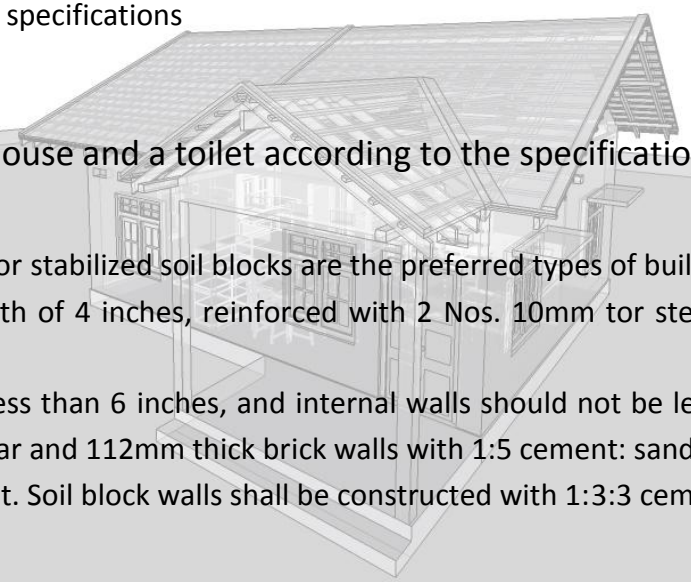
1st installment – Advance payment at the beginning

2nd installment - Upon completion of foundation as per the following specifications.

Foundation

- Minimum width of the foundation trench- 1' 6" (18")
- Minimum depth of the foundation trench - 1' 6" (18")

- Foundation should be raised to a minimum height of 1 foot above the surrounding ground. In flood prone areas, it should be raised above the known flood height.
- Lean concrete in 1:3:6 ratio of cement: sand: 11/2" metal shall be laid to a thickness of 3" at the bottom of the foundation (metal can be substituted with hard durable building debris up to 50 % of the quantity).
- Rest of the foundation shall be built with 6"-9" random rubble masonry, burnt clay bricks or solid cement sand blocks in 1: 6 cement: sand mortar. Hollow or cellular blocks are not recommended for foundation construction.
- Underground part of the foundation shall have a minimum width of 1' 6" (18")
- Width of the foundation above the ground level shall be reduced to one foot (12")
- The top surface of the foundation to be laid with a bitumen Damp Proof Course (DPC) and blinded with sand
- It is advisable to get the Technical Officer's instructions in selecting materials to be used
- Although a plinth beam is not generally required, a plinth beam as specified by the TO/Engineer shall be constructed where soft soils or expansive soils are found, and in tsunami prone areas.
- Foundation of toilet shall also be constructed as per above specifications



3rd installment - Upon completion of walls of the entire house and a toilet according to the specifications given below:

Walls/ Superstructure

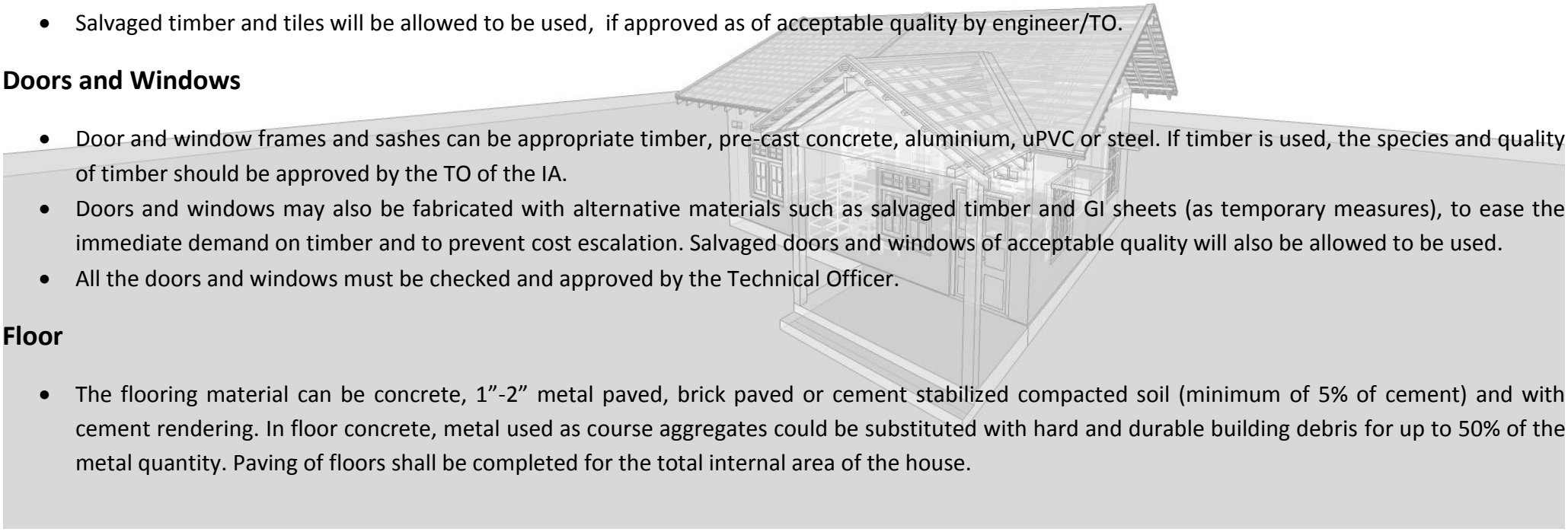
- Clay Bricks, cement: sand blocks (Solid, hollow or cellular), or stabilized soil blocks are the preferred types of building material for the superstructure.
- A ring beam at lintel level in 1:2:4 (20) concrete to a depth of 4 inches, reinforced with 2 Nos. 10mm tor steel bars shall be provided over all the external walls and lateral center wall.
- The minimum thickness of all external walls shall not be less than 6 inches, and internal walls should not be less than 4 inches thick. 6 inches thick brick walls shall be constructed with 1:8 cement sand mortar and 112mm thick brick walls with 1:5 cement: sand mortar.
- Stabilized Soil blocks shall contain a minimum of 5% cement. Soil block walls shall be constructed with 1:3:3 cement: soil: sand mortar. For soil blocks, requirements given in SLS1382 shall be satisfied.

4th installment – Upon completion of roof and floor paving of the entire house, internal plastering of one room, kitchen and the living area, floor rendering in one room and kitchen, fixing of all external door and window frames and sashes, ironmongery and locks, completion of toilet (internal plaster up to 3ft) including pit, and kitchen with smoke expelling mechanism (chimney or other), according to the following specifications;

Roof

A tile roof or sheet roof shall have an appropriate slope. Minimum recommended slope for a tiled roof is 25^{o}.

- The roof structure could be steel, appropriate timber, coconut rafters or Palmyra rafters. All untreated timber should be applied with two coats of wood preservatives.
- Proper anchoring against uplift due to wind shall be provided. Roof structure should be properly anchored to the walls, up to the depth of the ring beam of wall, to prevent blowing off in high winds. Higher roof slopes will increase resistance to withstand strong winds. Accordingly a minimum gradient of 25^{0} for Calicut tile roofs is recommended.
- Roof cladding should be clay tiles or any other type (except asbestos) approved by the engineer/TO.
- Salvaged timber and tiles will be allowed to be used, if approved as of acceptable quality by engineer/TO.



Doors and Windows

- Door and window frames and sashes can be appropriate timber, pre-cast concrete, aluminium, uPVC or steel. If timber is used, the species and quality of timber should be approved by the TO of the IA.
- Doors and windows may also be fabricated with alternative materials such as salvaged timber and GI sheets (as temporary measures), to ease the immediate demand on timber and to prevent cost escalation. Salvaged doors and windows of acceptable quality will also be allowed to be used.
- All the doors and windows must be checked and approved by the Technical Officer.

Floor

- The flooring material can be concrete, 1”-2” metal paved, brick paved or cement stabilized compacted soil (minimum of 5% of cement) and with cement rendering. In floor concrete, metal used as course aggregates could be substituted with hard and durable building debris for up to 50% of the metal quantity. Paving of floors shall be completed for the total internal area of the house.

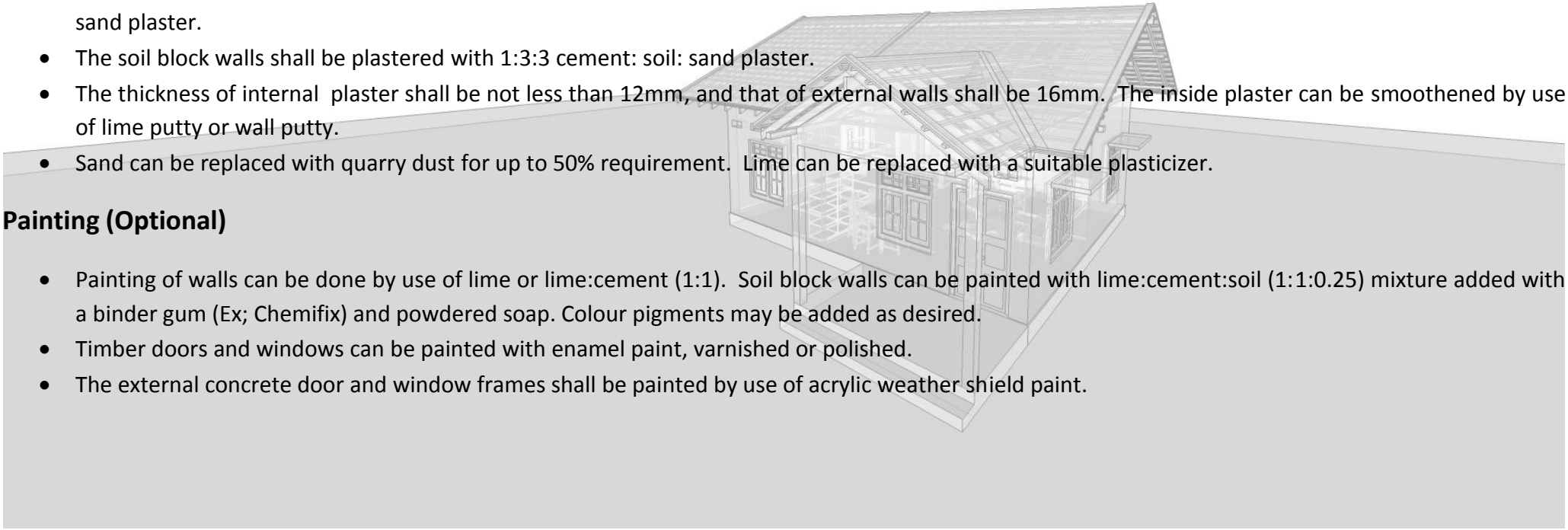
- Cement rendering shall be done with 1:3 cement sand mix with a neat cement finish. Cement rendering shall be completed for the lockable room, the kitchen and the toilet.

Plaster

- It is recommended to reduce plastered walls by applying alternative architectural finishes such as exposed brick/block walls with plaster bands (Architraves) at edges and door/ window reveals (can be painted with low cost cement based paint or mud paint). However as a minimum one room, kitchen, the living area and internal walls of the toilet up to a height of 3ft. are required to be plastered. Plaster on the other internal walls can be allowed to be completed during the stages to follow, in an incremental building process. Sand can also be reduced by using earth based plaster. In Earth based plasters mixing ratio of cement: sand: soil to be decided on site by conducting trial mixtures to suit the soil type (approximate ratio 1:3:3). Commonly available pigments may be added to achieve colures.

General specifications to follow in plastering are as follows;

- The foundation plinth plaster shall be 1:3 cement sand mortar with a neat cement finish.
- The brick or cement block walls could be plastered with 1:1:5 cement: lime: sand plaster. The brick walls can also be plastered with 1:2:6 cement: soil: sand plaster.
- The soil block walls shall be plastered with 1:3:3 cement: soil: sand plaster.
- The thickness of internal plaster shall be not less than 12mm, and that of external walls shall be 16mm. The inside plaster can be smoothened by use of lime putty or wall putty.
- Sand can be replaced with quarry dust for up to 50% requirement. Lime can be replaced with a suitable plasticizer.



Painting (Optional)

- Painting of walls can be done by use of lime or lime:cement (1:1). Soil block walls can be painted with lime:cement:soil (1:1:0.25) mixture added with a binder gum (Ex; Chemifix) and powdered soap. Colour pigments may be added as desired.
- Timber doors and windows can be painted with enamel paint, varnished or polished.
- The external concrete door and window frames shall be painted by use of acrylic weather shield paint.

Internal concrete frames shall be painted with emulsion paint. The steel door and window frames, if any, shall be painted with anticorrosive paint and enamel paint.

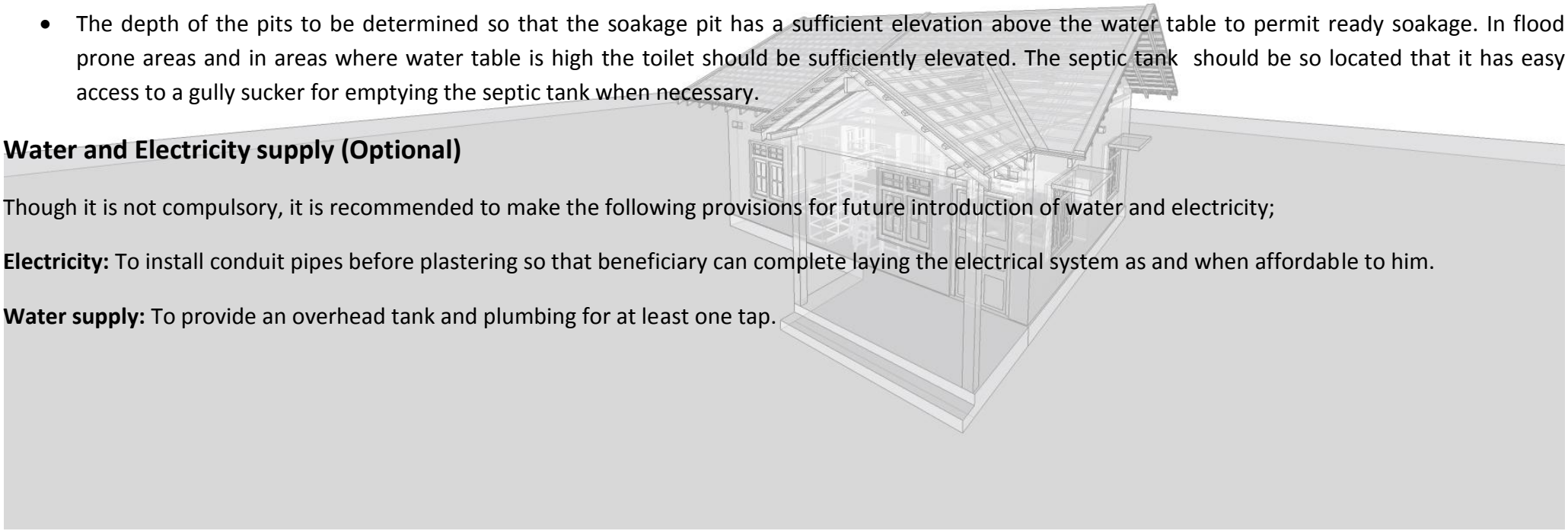
Toilet

- A suitable design with an acceptable effluent disposal system shall be followed. TOs of IAs will provide technical advisory in recycling of waste water for home gardening.
- A minimum standard for a toilet shall include a pour flush squatting plate with an adequate effluent disposal system. This is essential for overcoming health risks, protection of the environment, and for improvement of the quality of life.
- Each toilet, as a minimum, will have either of the following:

  a. Water sealed flush toilet with a septic tank and soakage pit

  b. Water sealed flush toilet with a cess pit (single pit)

- The depth of the pits to be determined so that the soakage pit has a sufficient elevation above the water table to permit ready soakage. In flood prone areas and in areas where water table is high the toilet should be sufficiently elevated. The septic tank should be so located that it has easy access to a gully sucker for emptying the septic tank when necessary.



Water and Electricity supply (Optional)

Though it is not compulsory, it is recommended to make the following provisions for future introduction of water and electricity;

Electricity: To install conduit pipes before plastering so that beneficiary can complete laying the electrical system as and when affordable to him.

Water supply: To provide an overhead tank and plumbing for at least one tap.

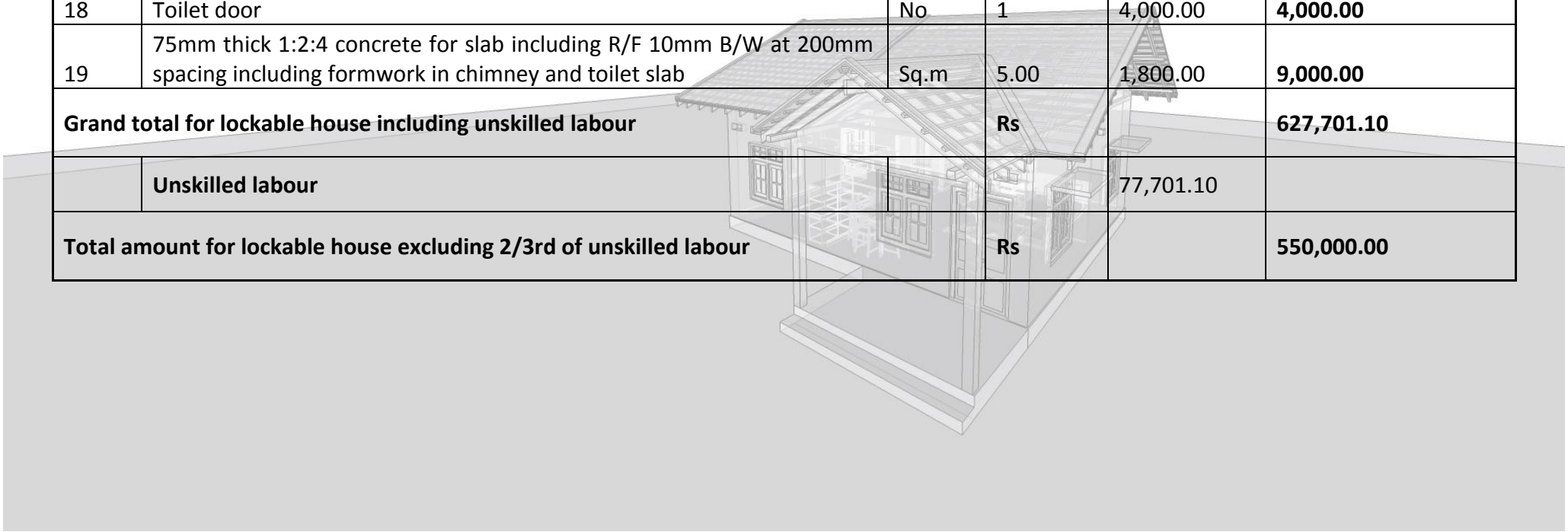
SAMPLE PRICED BILL OF QUANTITIES APPROVED BY THE INDIAN HIGH COMMISSION

Bill of Quantities for Lockable House - Type: I

Approximate Plinth area -550 sq.ft

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	13.20	500.00	**6,600.00**
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.60	9,000.00	**14,400.00**
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	12.60	7,500.00	**94,500.00**
4	Applying DPC on top of foundation with Bitumen	m	47.00	100.00	**4,700.00**
5	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	96.00	1,200.00	**115,200.00**
6	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	57.50	1,000.00	**57,500.00**
7	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	36.70	750.00	**27,525.00**
8	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers, and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	77.70	1,900.00	**147,630.00**
9	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	10.50	225.00	**2,362.50**
10	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.00	9,898.00	**9,898.00**
11	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	45.00	650.00	**29,250.00**

12	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	120.00	350.00	**42,000.00**
13	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" width	m	29.70	128.00	**3,801.60**
14	12mm thick 1:3 cement floor rendering in a room, kitchen and toilet	Sq.m	19.30	380.00	**7,334.00**
15	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.00	9,000.00	**18,000.00**
16	Window- supplying and fixing of 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	4.00	7,000.00	**28,000.00**
17	Supplying and fixing squatting pan. Rate including plumbing	Item	1	6,000.00	**6,000.00**
18	Toilet door	No	1	4,000.00	**4,000.00**
19	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.00	1,800.00	**9,000.00**
Grand total for lockable house including unskilled labour			**Rs**		**627,701.10**
	Unskilled labour			77,701.10	
Total amount for lockable house excluding 2/3rd of unskilled labour			**Rs**		**550,000.00**



EXTRACTS FROM SRI LANKA STANDARDS ON COMMON BUILDING MATERIALS AND COMPONENTS

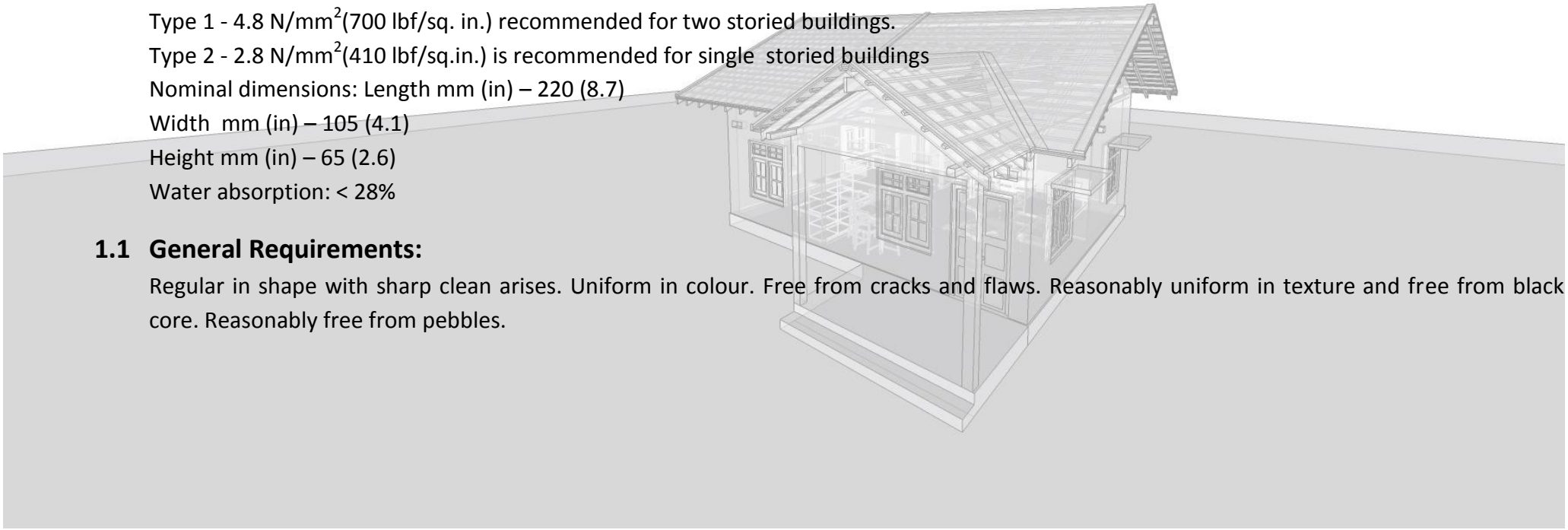
1. Common Burnt Clay Building Bricks: SLS 39: 1978 (2008)

1.1 Machine made wire cut bricks:

Compressive strength: 10.0 MPa (1450 lbf/sq. in.)
Nominal dimensions: Length mm (in) – 220 (8.7)
Width mm (in) – 105 (4.1)
Height mm (in) – 65 (2.6)
Water absorption: < 18%

1.2 Hand-made bricks:

Compressive strength:
Type 1 - 4.8 N/mm^2(700 lbf/sq. in.) recommended for two storied buildings.
Type 2 - 2.8 N/mm^2(410 lbf/sq.in.) is recommended for single storied buildings
Nominal dimensions: Length mm (in) – 220 (8.7)
Width mm (in) – 105 (4.1)
Height mm (in) – 65 (2.6)
Water absorption: < 28%



1.1 General Requirements:

Regular in shape with sharp clean arises. Uniform in colour. Free from cracks and flaws. Reasonably uniform in texture and free from black core. Reasonably free from pebbles.

2. Compressed Stabilized Earth Blocks: SLS 1382: 2009

2.1 Sizes

Sizes				
Block Type	**Length (mm)**	**Width (mm)**	**Height (mm)**	**Block description**
I	230	110	75	Plain block
II	240	115	90	Solid or hollow block
III	290	140	90	Plain/interlocking block
IV	220	140	130	Plain or interlocking block
V	220	220	130	Plain or interlocking block

2.2 Physical Characteristics

Physical characteristics	
Characteristic	**Specified limit**
Dry density	>1750 kg/m^3
Total water absorption	< 15 %
Dry compressive strength	Grade 1: > 6.0 N/mm^2, Grade2:> 4.0 up to 6.0 N/mm^2 , Grade 3: >2.8 up to 4.0 N/mm2
Wet compressive strength	Grade 1: > 2.4 N/mm2, Grade2:> 1.6 up to 2.4 N/mm2 , Grade 3: >1.2 up to 1.6 N/mm2
Linear expansion upon saturation with water	< 0.10%

2.3 Suitable soil for block manufacturing:

Sand + Gravel should be more than 65 % (max particle size ≤ 12 mm)	Silt: 5%-10%	Clay: 10%- 15 %	pH value : 6.0 to 8.0

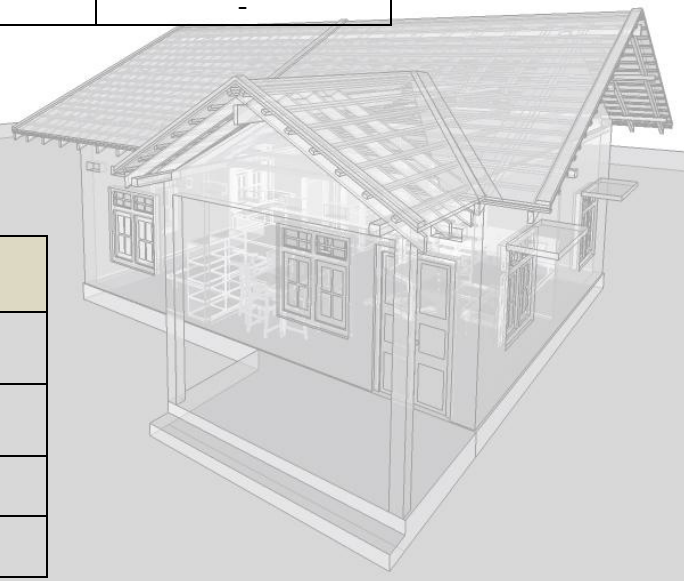
3. Cement Bricks: SLS 847: 1989

3.1 Definition of Brick :

A masonry unit not exceeding 337.5 mm in length, 225.0 mm in width or 112.5 mm in height.

3.2 Work Sizes

Work Sizes of Bricks			
Length mm	Height mm	Width mm	
		90	103
190	65	x	-
190	90	x	-
215	65	-	x
290	90	x	-



3.3 Compressive strength: 2.8 N/mm^2

3.4 Physical Properties

Physical Property	Specified Value
Drying shrinkage	0.06%
Wetting expansion	0.03%
Water absorption	240 kg/m^3
Moisture content	40%

4. Cement Blocks: SLS 855: 1989

4.1 Definition of Block:

A masonry unit which when used in its normal aspect exceeds the height or length or width specified for bricks (>337.5 mm in length, 225.0 mm in width or 112.5 mm in height).

4.2 Work Sizes:

Table 1 – Work sizes of blocks

		Width mm												
Length mm	**Height mm**	**75**	**100**	**115**	**125**	**140**	**150**	**175**	**190**	**200**	**215**	**220**	**225**	**250**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
390	190	x	x	x	-	x	x	-	x	x	-	-	-	-
440	140	x	x	-	-	x	x	-	x	x	-	-	x	-
440	190	x	x	-	-	x	x	-	x	-	x	x	-	-
440	215	x	x	x	x	x	x	x	x	x	x	x	x	x
440	290	x	x	-	-	x	x	-	x	x	x	-	-	-
590	140	x	x	-	-	x	x	-	x	x	x	-	-	-
590	190	x	x	-	-	x	x	-	x	x	x	-	-	-
590	215	x	x	-	x	x	x	x	-	x	x	-	x	x

4.3 Shell and Web Thicknesses:

Table 2 : Minimum shell and web thickness for hollow or cellular blocks

All dimensions in millimetres

Workn size block width	Minimum face sheel thickness	Minium thickness of any web	Minium total web thickness per course in any 400mm length of walling
100 or less	25	25	50
>100 < 150	25	25	60
>100 < 200	30	25	60
>200	35	30	75

4.4 Strength:

The compressive strength (average crushing strength of 10 blocks or more) shall not be less than 1.2 N/mm2

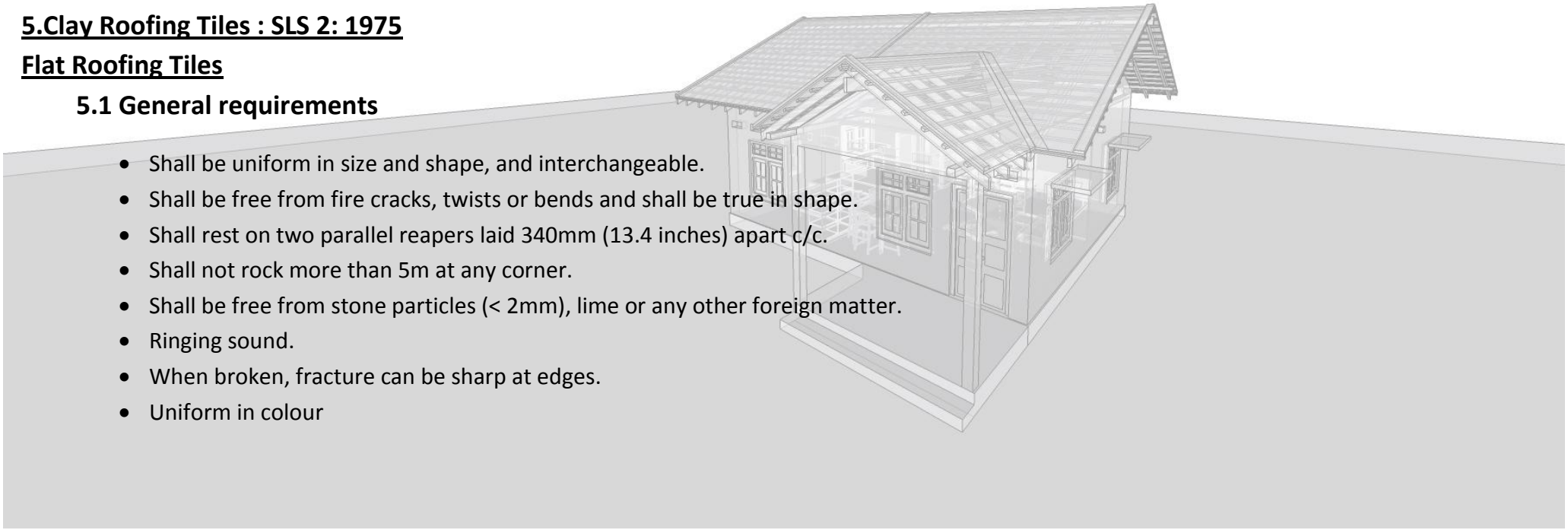
4.5 Physical Properties:

Physical Property	Specified Value
Drying shrinkage	0.06%
Wetting Expansion	0.03%
Water Absorption	240 kg/m3
Moisture Content	40

5.Clay Roofing Tiles : SLS 2: 1975

Flat Roofing Tiles

5.1 General requirements



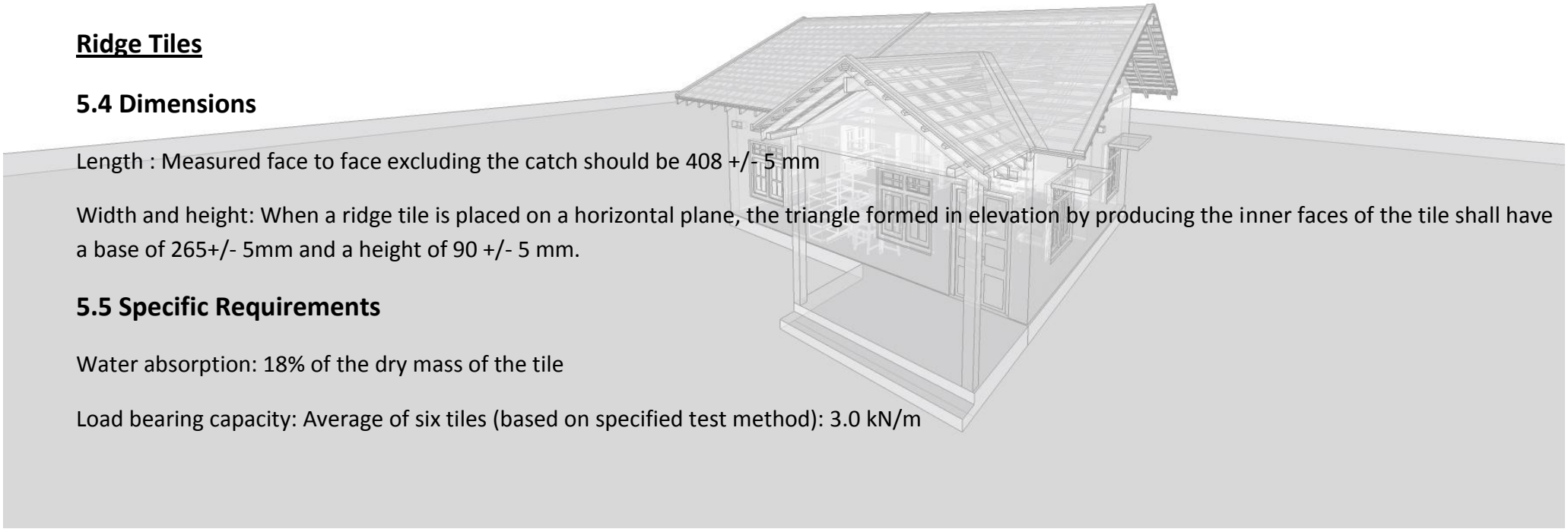
- Shall be uniform in size and shape, and interchangeable.
- Shall be free from fire cracks, twists or bends and shall be true in shape.
- Shall rest on two parallel reapers laid 340mm (13.4 inches) apart c/c.
- Shall not rock more than 5m at any corner.
- Shall be free from stone particles (< 2mm), lime or any other foreign matter.
- Ringing sound.
- When broken, fracture can be sharp at edges.
- Uniform in colour

5.2 Dimensions

- Nib- Either a centrally located continuous nib not less than 75mm (3 in) in length or two nibs each with a base of not less than 20mm (0.8 in).
- The projection of the nib not less than 12mm (0.5 in)
- Length= 410 +/- 10mm (15.7-16.5in)
- Width= 245+/- 5mm (9.4-9.8 in)

5.3 Specific requirements

- Mass (average of 12 tiles) < 2.7 kg (6.0 lb)
- Transverse strength- Average breaking load per tile out of 6 tiles shall not be less than 1 kN (102.0 kgf, 224.8 lbf). Breaking load of any individual tile > 950 N (96.9 kgf.; 213.6 lbf).
- Water absorption : Average absorption of 6 tiles < 18% of dry mass



Ridge Tiles

5.4 Dimensions

Length : Measured face to face excluding the catch should be 408 +/- 5 mm

Width and height: When a ridge tile is placed on a horizontal plane, the triangle formed in elevation by producing the inner faces of the tile shall have a base of 265+/- 5mm and a height of 90 +/- 5 mm.

5.5 Specific Requirements

Water absorption: 18% of the dry mass of the tile

Load bearing capacity: Average of six tiles (based on specified test method): 3.0 kN/m

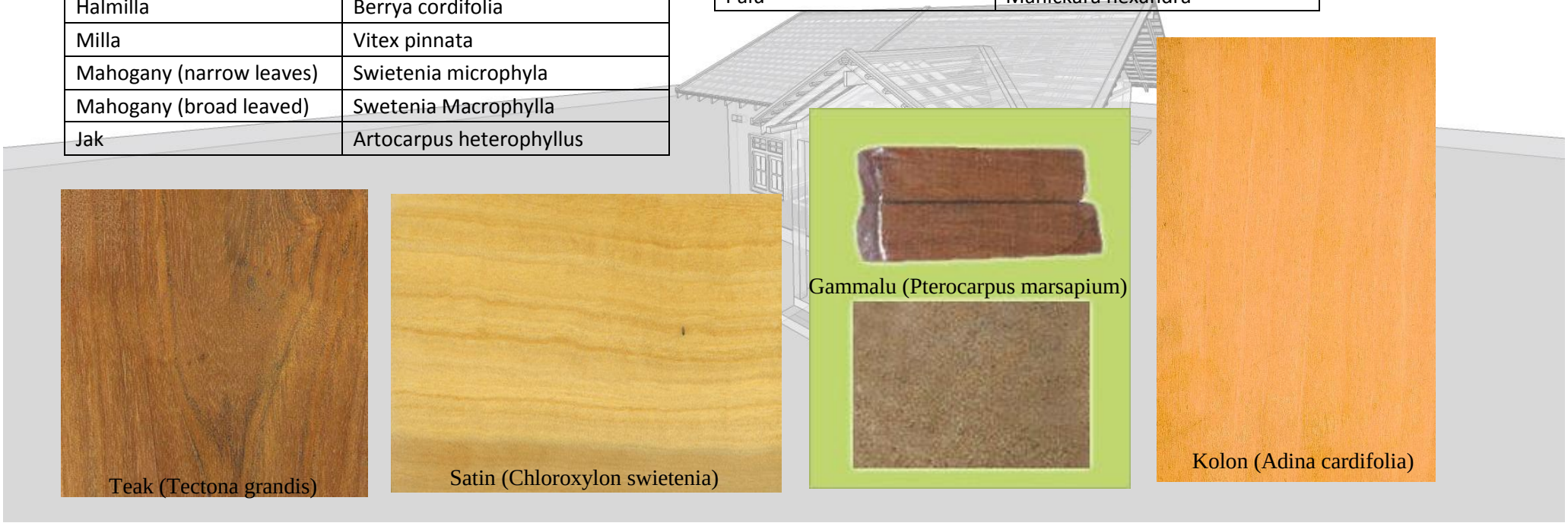
6. Building Timber: SLS 263: 1974

The density of timber used for building purposes should not in general be less than 640 kg/m^2 at 12% moisture content

TIMBER CLASSIFICATION OF THE STATE TIMBER CORPORATION

Supper Luxury Class	**Botanical Name**
Teak	Tectona grandis
Ebony	Diospyros ebenum
Nedun	Pericopsis mooniana
Calamander	Diospyros quaesita
Luxury Class	**Botanical Name**
Satin	Chloroxylon swietenia
Halmilla	Berrya cordifolia
Milla	Vitex pinnata
Mahogany (narrow leaves)	Swietenia microphyla
Mahogany (broad leaved)	Swetenia Macrophylla
Jak	Artocarpus heterophyllus

Special Class Upper	**Botanical Name**
Gammalu	Pterocarpus marsapium
Hulanhik	Chukrasia velutina
Margosa	Azadirachta indica
Suriyamara,	Albizia odoratissima
Wewarana	Alseodaphane semecarpifolia
Kolon	Adina cardifolia
Velang	Pterospermum canescens
Palu	Manickara hexandra

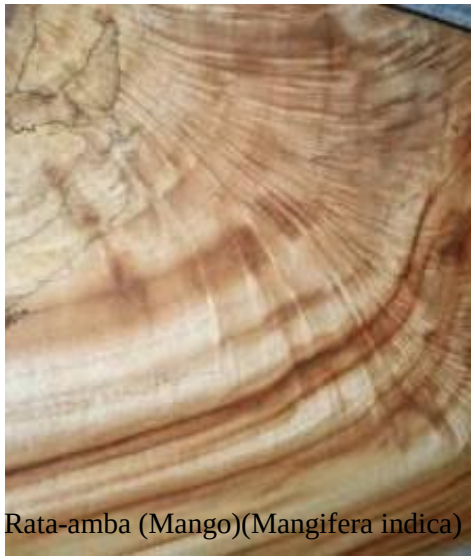


Special Class	Botanical Name
Tamarind (Hard Wood),	Tamarindus indica
Kumbuk	Terminalia arjuna
Eucalyptus microcorys	
Class I	**Botanical Name**
Tawwanna	Palacuium rubiginosum
Uva Mandora	Hopea cordifolia
Munamal	Mimusops elengi
Ubberiya	Carallia calycina
Eucalyptus Pilularis	Eucalyptus Pilularis
Eucalyptus Pilularis,	Eucalyptus Pilularis,
Aceasia Melanoxylon	Aceasia Melanoxylon
Panakka	Pleurostylia opposita
Hora	Dipterocarpus zeylanicus
Kirihambiliya	Palaquium grande
Urukanu or Uruhonda	Lasianthera apicalis
Mandora	Vertica chinensis
Pihimbiya	Filicium decipiens
Ginikulu	Diospyros oocarpa
Halamba	Mitragyna parvifolia
Del	Artocarpus nobills
Liyan	Homalium zeylanicum
Neralu	Elaeodendron Glausum
Madan	Syzygium Cumini
Koon	Schleichera eleosa
Na	Mesua ferrea
Pathkela & Keeriya	Bridelia Mooni / Acacialeucophloea
Paramara	Samamea saman
Hedawaka	Chaetocarpus castanocarpus
Treated Grandis	Eucalyptus grandis

Class II	Botanical Name
Alubo	Syzygium Makul
Dawata	Carallia brachiata
Dawul-Kurundu	Neolitssa cassia
Godapara	Dillenia retusa
Halmandora	Vatica offinis
Panamora	Doona oblonga
Wa	Cassia siamea
Wellpenna	Amisophyllea cinnamocides
Toona	Cedrella toona
Mihiriya	Cordonia zeylanica
Damba	Syzygium gardneri
Cypress Ethdemata	Cupresus macrocarpa / Gmelina arborea
Ginisapu	Michelia champaca
Ehela	Cassia fistula
Kirikoon & Dunumandala	Walsura piscidia / stevosperm tetragonnm
Boron Treated Sawn Rubberwood,	Hevea braciliensis
Alastonia (Havari Nuga)	Alstonia macrophylla
Boron Treated Sawn Pinus	Pinus spp
Eucalyptus Robusta (Red Gum)	Eucalyptus Robusta (Red Gum)
Blue Gum,	Eucalyptus globulus
Comporta	Aporesa cardiosperma
Redness Coconut	
Thiththeta.	Trichadenia zeylanica
All Doona and shorea spp:except doona congestiflora	All Doona and shorea spp:except doona congestiflora
All calophyllum spp: species other than calaphyllum bracteatum	All calophyllum spp: species other than calaphyllum bracteatum

Class III	Botanical Name
Aridda	Compnosperma zeylanica
Malaboda	Myristica dactylosdes
Diyathaliya	Mastixia tetrandra
Pinus	Pinus spp
Lunumedella	Melia dulia
Kalu-Sudu Thalambu	
Atamba	Mangifera zeylanica
Bulu	Terminalia belerica
Kahata	Careya arbovea
Rubber	Hevea braciliensis
Rata-amba (Mango)	Mangifera indica
Ratadel	
Godakaduru	Strychuos nuxvomica
Gokalu	Garcinia morella
Sabbukku(Gravilliya)	Gravillea robusta
Accacia Decaran	Accacia Decaran
Athdemata	Gmelina arborea
Godakirilla	Holoptelea integrifolia
Mara	Albizzia molucana
Kataboda	Cullenia ceylonica
Goraka	Garcinia cambogia
Tammarin(Sapwood)	Tamarindus indica
Bakme	Nauclea orientalis
Kakuna	Canarium zeylanicum
Casurina(Kasa Kasa)	Casuarina equisetifolia
Beth-hik	Lannea coromandelica
Davu.	Anogeissus latifolia
Class III Lower Grade	**Botanical Name**
All species not otherwise classified.	

Rubber (Hevea braciliensis)

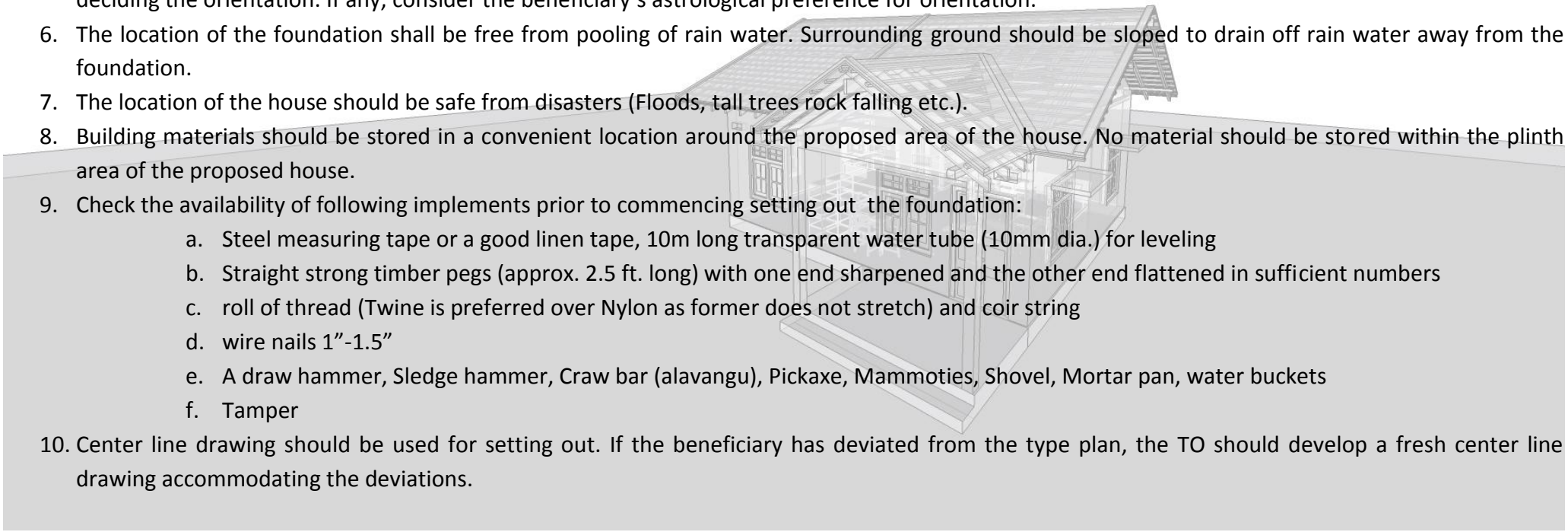

Rata-amba (Mango)(Mangifera indica)


Godakirilla (Holoptelea integrifolia)

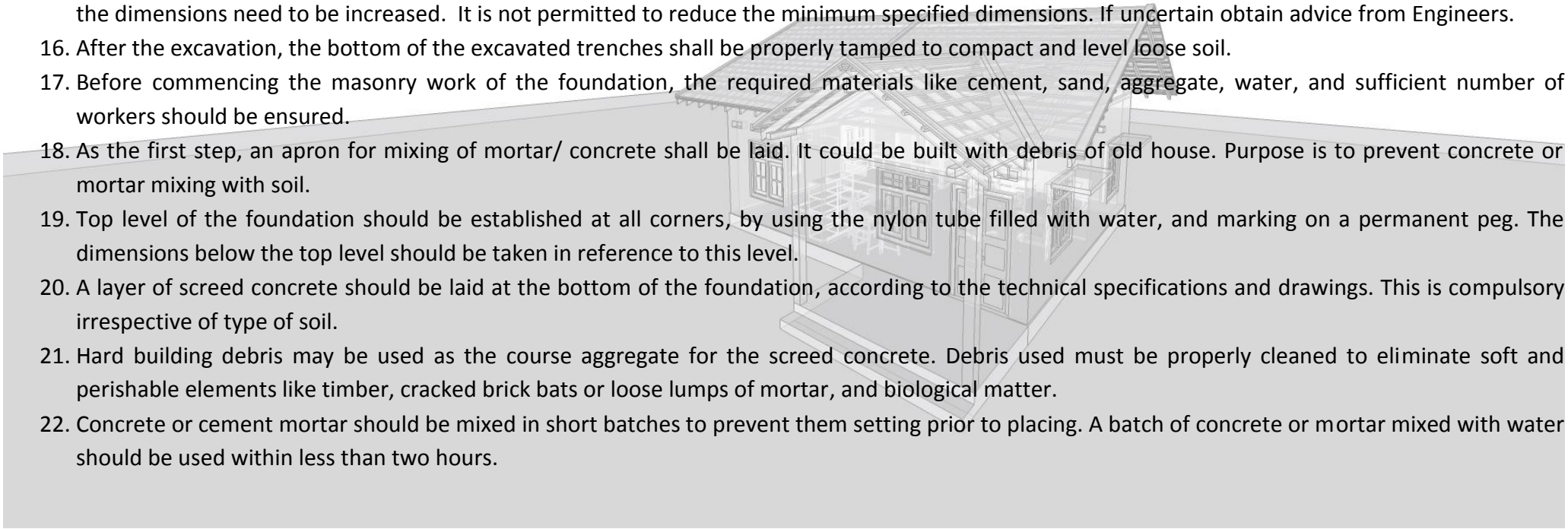

Pinus (Pinus spp)

INSTRUCTIONS TO THE TECHNICAL OFFICERS IN SETTING OUT AND FOUNDATION LAYING

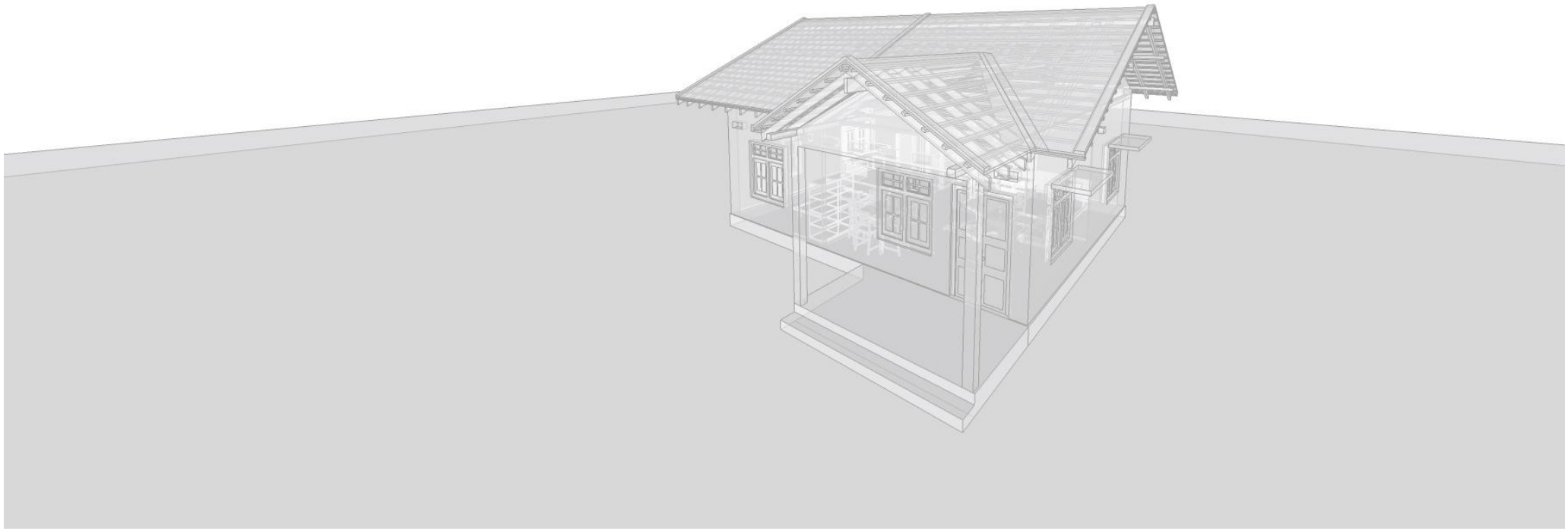
1. Decide your purpose for conducting the inspection and be familiar with the relevant Technical Specifications and drawings.
2. Make sure that you carry the relevant drawings, a copy of technical specifications and the tools on field visits??? to check the works being carried out. You must always carry a calculator and steel measuring tape, and other tools such as a plumb bob, spirit level, water tube depending on type of work you are going to inspect. (Technical Specifications of the Indian Housing Project are given in the attachment)
3. The area of the house, where the foundation is planned to be laid, and about 2 meters beyond on each side should be cleared of vegetation. The area within the house should be strictly clear of top soil, vegetation, roots or any other perishable materials. Top soil excavated from trenches too should be disposed away from the area of the house. If the soil below is suitable for filling inside foundations or backfilling of trenches, it could be deposited inside the house area.
4. Check the distances from boundaries and road center set back distances, to ensure compliance with the local authority planning regulations.
5. Check the orientation of the house. Gable walls facing East-West orientation is preferred in terms of thermal comfort but other considerations like wind/wave direction in the coastal areas may become priorities depending on the location. Discuss the pros and cons with the beneficiaries in deciding the orientation. If any, consider the beneficiary's astrological preference for orientation.
6. The location of the foundation shall be free from pooling of rain water. Surrounding ground should be sloped to drain off rain water away from the foundation.
7. The location of the house should be safe from disasters (Floods, tall trees rock falling etc.).
8. Building materials should be stored in a convenient location around the proposed area of the house. No material should be stored within the plinth area of the proposed house.
9. Check the availability of following implements prior to commencing setting out the foundation:
    a. Steel measuring tape or a good linen tape, 10m long transparent water tube (10mm dia.) for leveling
    b. Straight strong timber pegs (approx. 2.5 ft. long) with one end sharpened and the other end flattened in sufficient numbers
    c. roll of thread (Twine is preferred over Nylon as former does not stretch) and coir string
    d. wire nails 1"-1.5"
    e. A draw hammer, Sledge hammer, Craw bar (alavangu), Pickaxe, Mammoties, Shovel, Mortar pan, water buckets
    f. Tamper
10. Center line drawing should be used for setting out. If the beneficiary has deviated from the type plan, the TO should develop a fresh center line drawing accommodating the deviations.



11. First, set out the most critical side of the house (in terms of setback distances) and mark the center line with pegs. The center line pegs should be driven sufficiently away from the foundation trenches. Exact center on top of the peg has to be established by driving a wire nail on top surface of the peg, and a string drawn tightly in between to mark the centerline. As the next step, set out a centerline of a wall perpendicular to the first line and proceed with the following lines by drawing parallels to two perpendicular lines already set out. Check the right angle corners with 3-4-5 rule and in addition by measuring the diagonals. If the mason has done the setting out, the TO shall check the measurements and right angles. All measurements should be parallel to the level ground.
12. Also, it must be ensured that the total plinth area including toilet should not be less than 550 sq.ft.
13. In setting out the toilet and septic tank, the distance requirements specified in the Technical Specifications shall be complied with.
14. Subsequent to setting out the center lines, sides of the trenches should be marked using pegs and coir rope. The pegs used for this purpose need not to be as strong as the pegs used for marking center lines, which need to remain until the foundation is built. If any center line pegs are likely to get disturbed when excavations are done, such pegs should be re-fixed at a safer place by extending the center line. All centerline pegs shall be stably fixed to the ground by filling around with concrete.
15. Minimum dimensions of excavation are specified in the type plans and Technical Specifications. TO shall review the soil condition and decide whether the dimensions need to be increased. It is not permitted to reduce the minimum specified dimensions. If uncertain obtain advice from Engineers.
16. After the excavation, the bottom of the excavated trenches shall be properly tamped to compact and level loose soil.
17. Before commencing the masonry work of the foundation, the required materials like cement, sand, aggregate, water, and sufficient number of workers should be ensured.
18. As the first step, an apron for mixing of mortar/ concrete shall be laid. It could be built with debris of old house. Purpose is to prevent concrete or mortar mixing with soil.
19. Top level of the foundation should be established at all corners, by using the nylon tube filled with water, and marking on a permanent peg. The dimensions below the top level should be taken in reference to this level.
20. A layer of screed concrete should be laid at the bottom of the foundation, according to the technical specifications and drawings. This is compulsory irrespective of type of soil.
21. Hard building debris may be used as the course aggregate for the screed concrete. Debris used must be properly cleaned to eliminate soft and perishable elements like timber, cracked brick bats or loose lumps of mortar, and biological matter.
22. Concrete or cement mortar should be mixed in short batches to prevent them setting prior to placing. A batch of concrete or mortar mixed with water should be used within less than two hours.



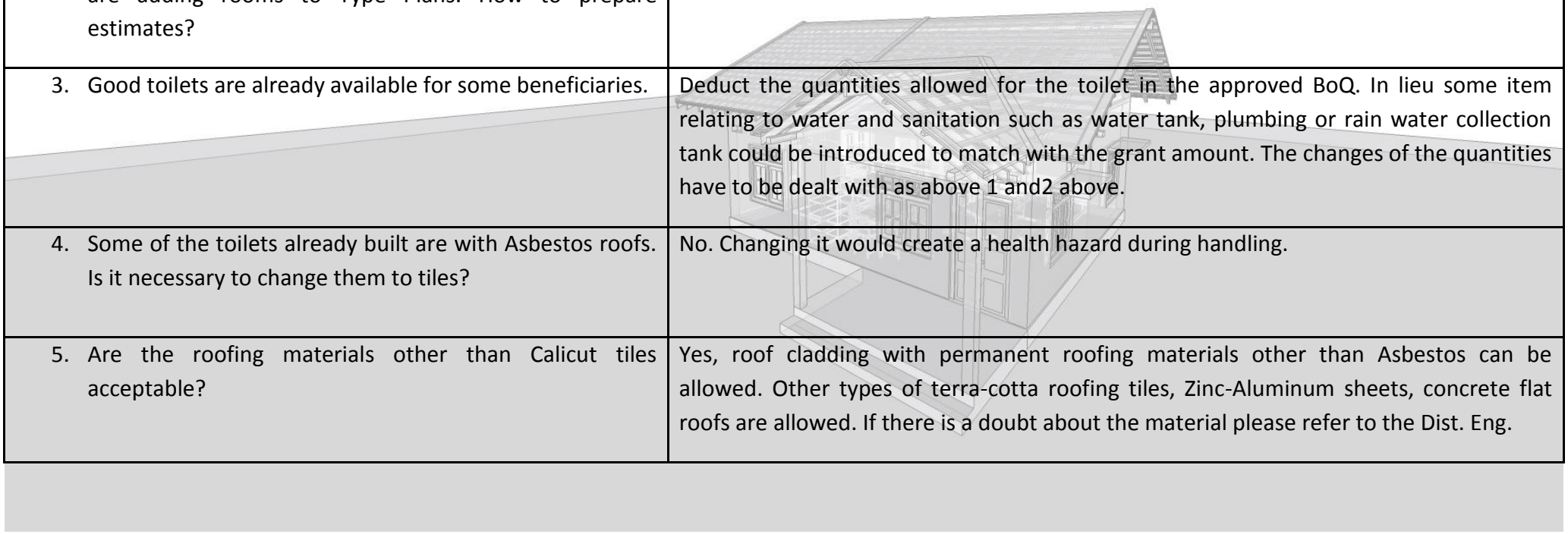
23. In building RR Masonry, cavities among the large rubble stones must be filled with small stones. Small stones could be sledged by breaking the larger ones using a sledge hammer.
24. Towards the top of RR masonry section below the ground level, dowel stones to project above should be provided at around 3 ft. intervals, to ensure connectivity with the section above.
25. On top of the foundation, a DPC should be laid as per the technical specifications and surfaced with bitumen layer. Prior to laying the DPC, the level should be checked ones again using the level tube.
26. Height of the foundation at DPC level should not be less than one foot above the ground level.
27. Backfilling shall be done in layers with proper compaction.
28. All actual dimensions of the foundation must be recorded prior to backfilling the trenches.
29. The masonry work shall be cured for 14 days.



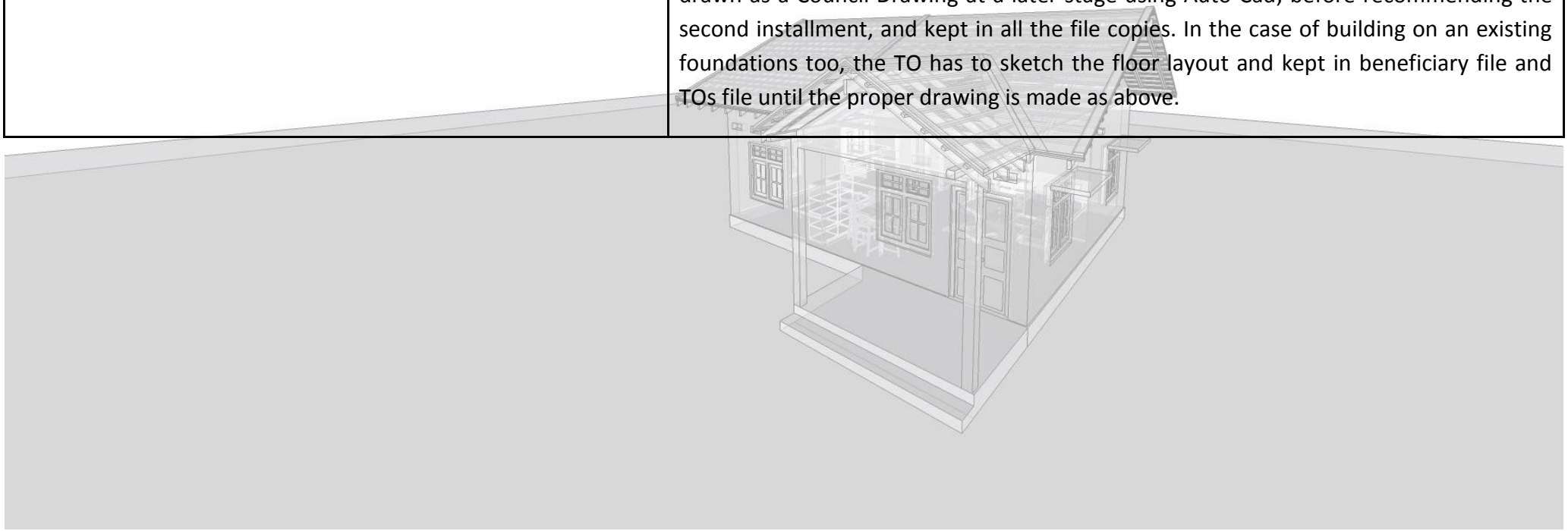
DEALING WITH DEVIATIONS IN THE CONSTRUCTION PROCESS

Procedures to deal with some common issues arising in the field are described in the tabulation below:

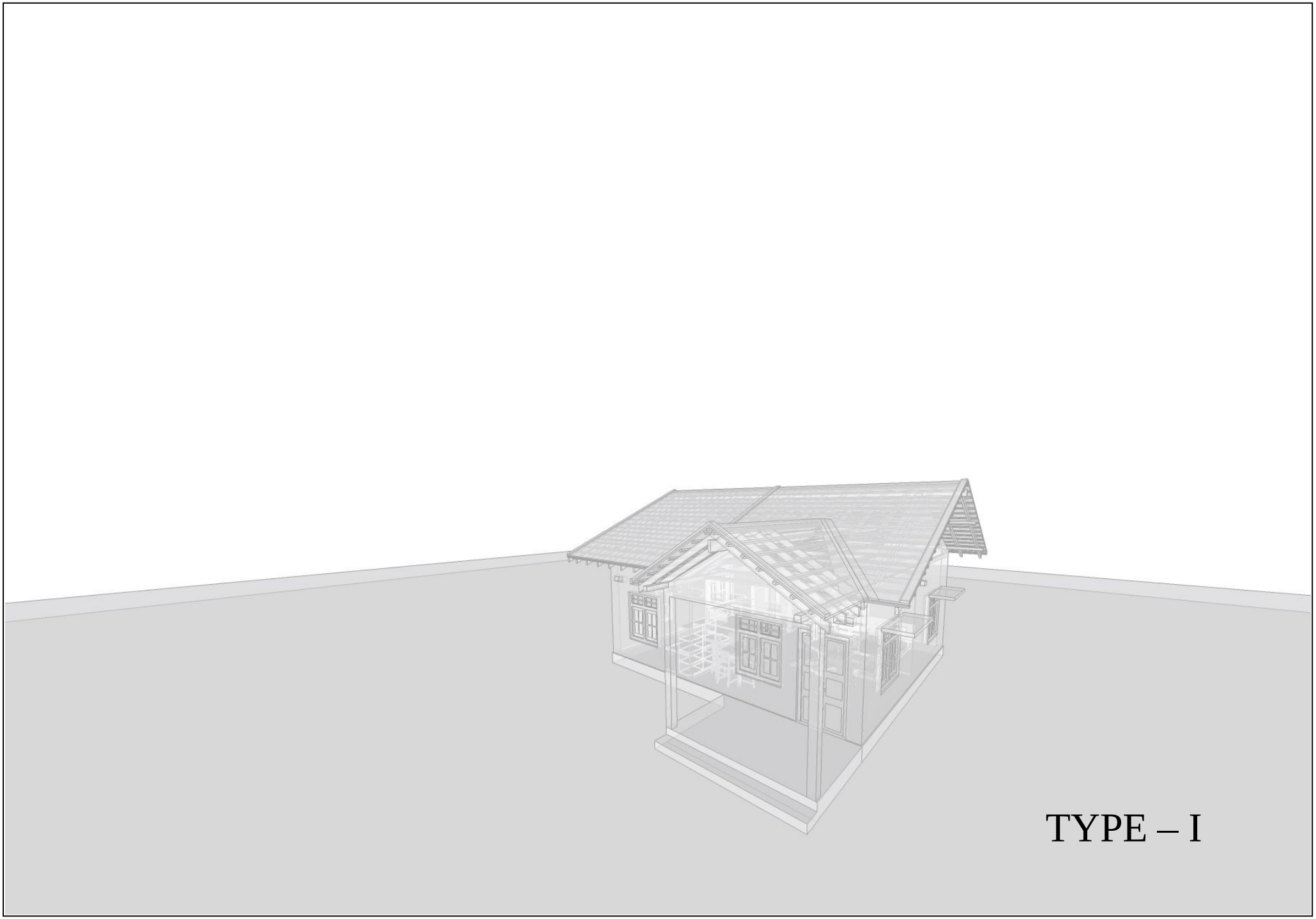
Issue	How to deal with
1. Some type plans are more than 550 sqft. Quantities are more than those allowed in the Type Plan 1 (approved one). How to prepare the estimate	Prepare the BoQ for the actual quantities of the Type Plan selected by the beneficiary and arrive at the total sum. Deduct the same amount deducted in the approved BoQ for unskilled labour and arrive at a sub total. Then deduct the total grant sum of Rs. 550,000/ and arrive at the balance that needs to be contributed by the beneficiary. Show it clearly as beneficiary contribution at the last row, educate the beneficiary about his financial commitment and get him to sign at the bottom.
2. Some beneficiaries make adjustments to dimensions of the Type Plans based on Wasthu requirements etc. Some are adding rooms to Type Plans. How to prepare estimates?	The plinth area after any adjustment should be equal to or more than 550 sq ft. If the additions increase the quantities, follow the above procedure.
3. Good toilets are already available for some beneficiaries.	Deduct the quantities allowed for the toilet in the approved BoQ. In lieu some item relating to water and sanitation such as water tank, plumbing or rain water collection tank could be introduced to match with the grant amount. The changes of the quantities have to be dealt with as above 1 and2 above.
4. Some of the toilets already built are with Asbestos roofs. Is it necessary to change them to tiles?	No. Changing it would create a health hazard during handling.
5. Are the roofing materials other than Calicut tiles acceptable?	Yes, roof cladding with permanent roofing materials other than Asbestos can be allowed. Other types of terra-cotta roofing tiles, Zinc-Aluminum sheets, concrete flat roofs are allowed. If there is a doubt about the material please refer to the Dist. Eng.



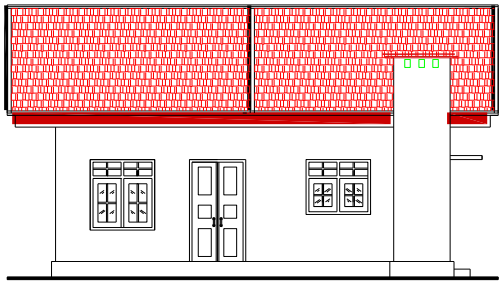
6. Some beneficiaries wish to build upon the existing foundation of their previous house. Can this be allowed?	Yes, as long as the foundation is structurally sound. However, to ensure any structural issues, laying of a plinth beam is to be made mandatory. If the foundation is less than 550 sq.ft in plinth area, a room should be added to bring it to equal or more than 550 sq.ft. Changes in the quantities in the actual BoQ should be dealt similar to the case 1,2 and 3 above.
7. Are the salvaged materials/ components allowed?	Beneficiaries must be encouraged to use the salvaged doors and windows, roof timber, undamaged tiles and bricks etc., as long as they are of acceptable quality. Some concrete beams and slabs of destroyed house also may be reused.
8. What to do when the plans are different from the Type Plans?	When the beneficiaries amend the Type Plans, a sketch of the floor layout with the changes marked in a different colour should be drawn on the back of the type plan, initially by the TO, and kept in his file and the beneficiary file. This should be properly drawn as a Council Drawing at a later stage using Auto Cad, before recommending the second installment, and kept in all the file copies. In the case of building on an existing foundations too, the TO has to sketch the floor layout and kept in beneficiary file and TOs file until the proper drawing is made as above.



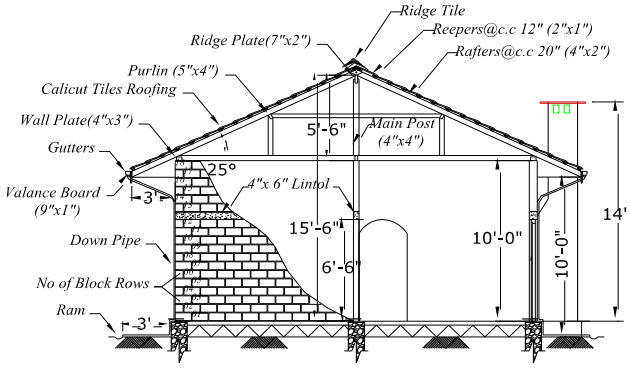
SECTION 2 :PLANS & ESTIMATES



TYPE – I

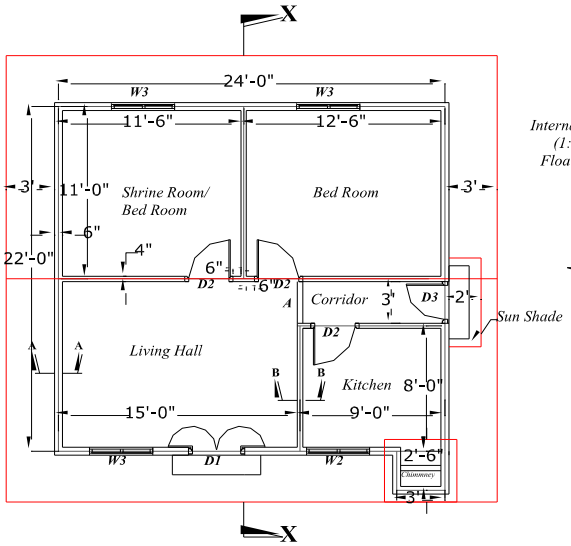


FRONT ELEVATION



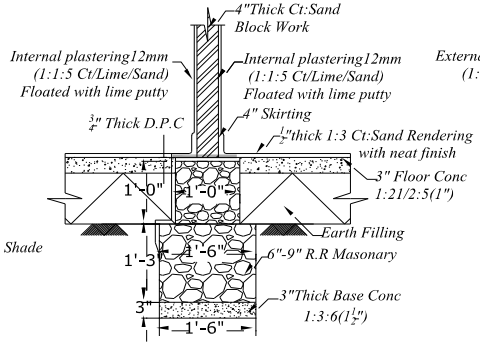
SECTION X-X

SCHEDULE OF DOORS & WINDOWS					Fixtures details (for a one item) (Heavy quality brass fitting)
S.No	Item	Size (External)	Description	Nos.	
01	D1	3'-6"x 6'-6"	Timber Panelled Door (2 Sash)	01	6 Nos.4"x 4"hinges, 1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4" barrel bolt
02	D2	3'-0"x 6'-6"	Timber Panelled Door	03	3 Nos. 2"x 4" hinges, 1 Nos. door handle 1 Nos. 2' barrel bolt(Note:1 Nos.lock for lockable room)
03	D3	2'-6"x 6'-6"	Braced & Batten Door	01	3 Nos. 2"x 4" tee hinges, 1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2" barrel bolt
04	W2	4'-0"x 3'-6"	Glazed Window (2 Sash)	01	4 Nos.2"x 4"hinges, 2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring
05	W3	4'-0"x 4'-6"	Glazed Window (2 Sash)	03	4 Nos.2"x 4"hinges, 2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring
06	A	2'-6"x 6'-6"	Arch	01	



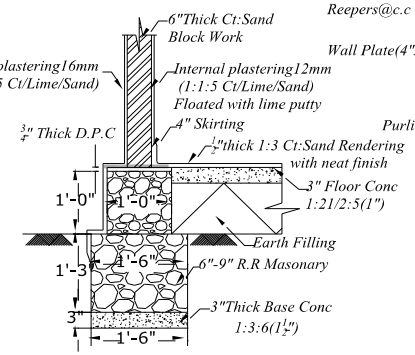
GROUND FLOOR PLAN

Scale :- 8'- 0" to an Inch



DETAILS OF INTERNAL WALL FOUNDATION SECTION B-B

Scale :- 2'- 0" to an Inch

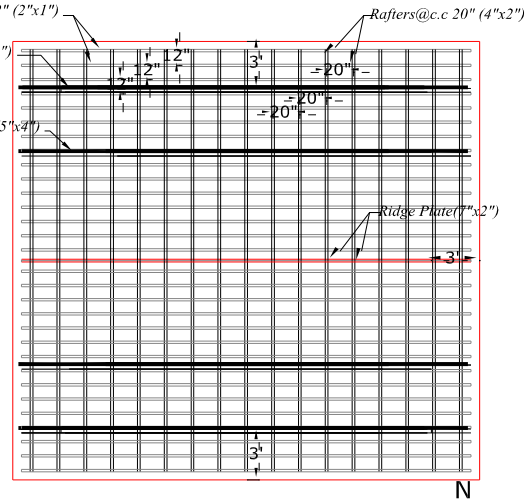


DETAILS OF EXTERNAL WALL FOUNDATION SECTION A-A

Scale :- 2'- 0" to an Inch

Note:-

This is a plan for guidance of the beneficiaries. The dimensions may be changed to suit beneficiary requirements without reducing the total floor area. Also materials for the construction indicated here may also be changed based on the technical specifications provided separately.



GABLE ROOF DETAILS

Scale :- 8'- 0" to an Inch

N

INDIA
India-Sri Lanka Friendship
सत्यमेव जयते

TYPE PLAN – I: PROPOSED HOUSE PLAN

DESIGNED BY:-
UN HABITAT

INDIAN HOUSING PROJECT

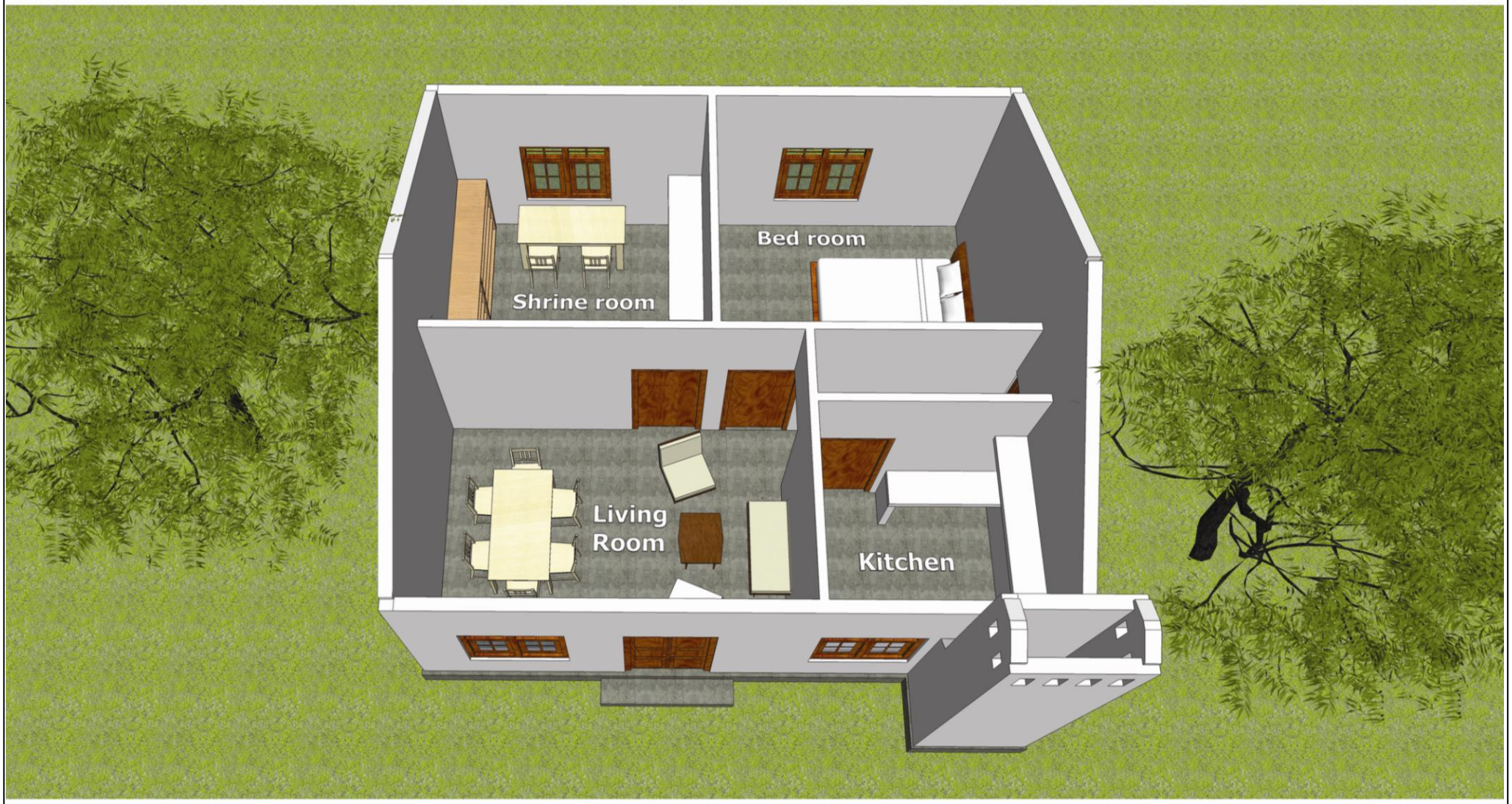
PLINTH AREA:-
565 sq.ft

DRAWING No:-
UNH/IHP/TP1/R001

सत्यमेव जयते INDIA India-Sri Lanka Friendship	TYPE PLAN – I: FRONT VIEW	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP1/002

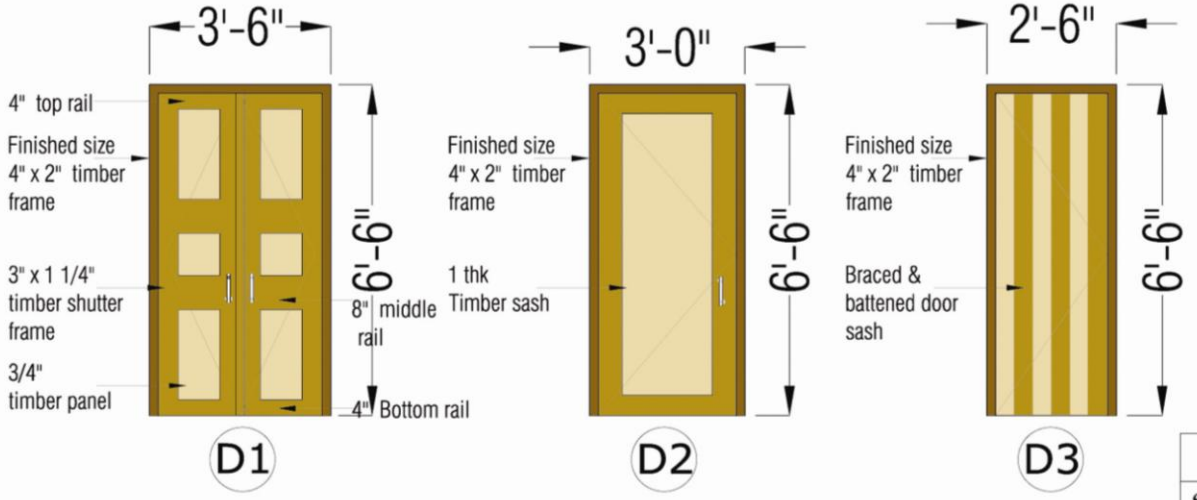
INDIA India-Sri Lanka Friendship	TYPE PLAN – I: FRONT VIEW WITHOUT EXTERNAL PLASTER	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP1/003

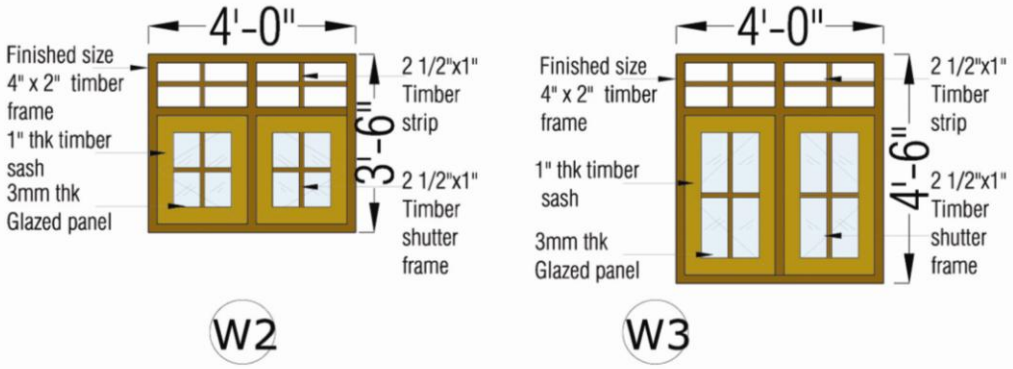
INDIA India-Sri Lanka Friendship	TYPE PLAN – I: REAR VIEW	DESIGNED BY:- UN HABITAT
सत्यमेव जयते	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP1/004



INDIA India-Sri Lanka Friendship	TYPE PLAN – I: INTERNEL ARRANGMENT OF ROOMS	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP1/005

INDIA India-Sri Lanka Friendship	TYPE PLAN – I: PLAN VIEW		DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	SCALE:- 2'- 0" = 1'0"	DRAWING No:- UNH/IHP/TP1/R 006





SCHEDULE OF DOORS & WINDOWS					Fixtures details [for a one item] [Heavy quality brass fitting]
S.No	Item	Size [External]	Description	Nos.	
01	D1	3'-6"x 6-'6"	Timber Panelled Door [2 Sash]	01	6 Nos.4"x 4"hinges, 1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4" barrel bolt
02	D2	3'-0"x 6-'6"	Timber Panelled Door	03	3 Nos. 2"x 4" hinges, 1 Nos. door handle 1 Nos. 2" barrel bolt[Note:1 Nos.lock for lockable room]
03	D3	2'-6"x 6'-6"	Braced & Batten Door	01	3 Nos. 2"x 4" tee hinges, 1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2" barrel bolt
04	W2	4'-0"x 3'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring
05	W3	4'-0"x 4'-6"	Glazed Window [2 Sash]	03	4 Nos.2"x 4"hinges, 2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring

INDIA
India-Sri Lanka Friendship
सत्यमेव जयते

TYPE PLAN – I: DETAILS OF DOORS & WINDOWS

DESIGNED BY:-
UN HABITAT

INDIAN HOUSING PROJECT

SCALE:-
NOT TOSCALE

DRAWING No:-
UNH/IHP/TP1/R002

Bill of Quantities for Lockable House - Type: I

Floor area -565 sq.ft

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	13.2	500.00	6,600.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.6	9,000.00	14,400.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	12.6	7,500.00	94,500.00
4	Applying DPC on top of foundation with Bitumen	m	47.0	100.00	4,700.00
5	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	96.0	1,200.00	115,200.00
6	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	57.5	1,000.00	57,500.00
7	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	36.7	750.00	27,525.00
8	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	77.7	1,900.00	147,630.00
9	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	10.5	225.00	2,362.50
10	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
11	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	45.0	650.00	29,250.00
12	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	120.0	350.00	42,000.00
13	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	29.7	128.00	3,801.60
14	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	19.3	380.00	7,334.00

15	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00
16	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	4.0	7,000.00	28,000.00
17	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
18	Toilet door	No	1.0	4,000.00	4,000.00
19	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
Sub-total for lockable house including unskilled labour			**Rs**		**627,701.00**
	Electrical and Plumbing (Optional)				
20	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
21	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
22	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,746.00
23	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
24	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
25	Supply and install Tap	No	1.0	405.00	405.00
Sub-total for plumbing and electricity			**Rs**		**17,781.00**
Grand total for lockable house including plumbing and electricity			**Rs**		**645,482.00**

Note:

Lockable house including

1 Internal plastering and rendering for one room , living room and Kitchen
2 External face finished with neat pointing
3 External front doors and windows fixing
4 Cubical (1x1.2x1.8m) with septic tank and soakage pit (1.5x1x1.5m)
5 Electrical and Plumbing (Optional)

Prepared: 28.08.2012
Revised 02.01.2013

Bill of Quantities for Lockable House -Type: I

Floor area -565 sq.ft

Construction Milestone -I (Foundation)

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank, and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	13.2	500.00	6,600.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.6	9,000.00	14,400.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	12.6	7,500.00	94,500.00
4	Applying DPC on top of foundation with Bitumen	m	47.0	100.00	4,700.00
	Sub-Total				**120,200.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	29.6	940.00	27,834.60
2	Sand	Cu.m	4.7	1,750.00	8,193.50
3	Aggregate (38mm)	Cu.m	1.5	3,500.00	5,144.90
4	Rubble	Cu.m	16.4	1,700.00	27,846.00
5	Bitumen/Tar	lit	8.8	130.00	1,153.90
	Materails- Sub Total				70,172.80
6	Mason	Day	20.0	1,000.00	19,922.00
7	Labor	Day	38.0	800.00	30,106.60
	Labor- Sub Total				50,028.60
	Total				**120,200.00**

Bill of Quantities for Lockable House -Type: I

Floor area -565 sq.ft

Construction Milestone -II (Wall/Superstructure)

No	Description	Unit	Qty	Rate	Amount
1	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	96.0	1,200.00	115,200.00
2	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	57.5	1,000.00	57,500.00
3	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	36.7	750.00	27,525.00
4	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	10.5	225.00	2,362.50
5	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	45.0	650.00	29,250.00
	Sub-Total				**231,838.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	27.9	940.00	26,218.10
2	Sand	Cu.m	4.3	1,750.00	7,558.00
3	Aggregate (20mm)	Cu.m	3.8	3,600.00	13,761.60
4	150mm Cement Block	No	1808.4	46.00	83,186.20
5	100mm Cement Block	No	1083.2	36.00	38,993.50
6	Re-bars 10mm	Bar	12.0	410.00	4,930.80
7	Binding wire	Kg	3.1	150.00	465.00
8	Formwork	Sq.m	15.6	50.00	782.10
9	Nails	Kg	4.3	150.00	647.20
	Materails- Sub Total				**176,542.60**
10	Mason	Day	18.0	1,000.00	18,167.10
11	Carpenter	Day	2.0	1,000.00	2,008.20
12	Labor	Day	44.0	800.00	35,121.70
	Labor- Sub Total				**55,297.00**
	Total				**231,838.00**

Bill of Quantities for Lockable House -Type: I

Floor area -565 sq.ft

Construction Milestone -III (Roof and Finishing)

No	Description	Unit	Qty	Rate	Amount
1	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	77.7	1,900.00	147,630.00
2	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
3	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	120.0	350.00	42,000.00
4	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	29.7	128.00	3,801.60
5	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	19.3	380.00	7,334.00
6	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00
7	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	4.0	7,000.00	28,000.00
8	Toilet door	No	1.0	4,000.00	4,000.00
9	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
10	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
	Sub-Total				**275,664.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	100x75mm-wall plate 4.65m	Nos	4.0	1,800.00	7,200.00
2	125x100mm- 4.65m Purlin	Nos	4.0	2,000.00	8,000.00
3	150x100mm-3.65m Tie beam	Nos	1.0	3,100.00	3,100.00
4	125x75mm- 0.9m Strut	Nos	1.0	450.00	450.00
5	175x50mm-3.65m Ridge Plate	Nos	2.0	2,100.00	4,200.00
6	50x25mm Reeper	m	355.0	30.00	10,650.00
7	100x50mm-2.7m -Rafter	Nos	36.0	625.00	22,500.00
8	100x50mm-2.1m -Rafter	Nos	36.0	500.00	18,000.00
9	Nails and binding wire	Kg	10.0	150.00	1,500.00
10	Flat Tiles	Nos	1200.0	35.00	42,000.00
11	Ridge Tiles	Nos	32.0	62.00	1,984.00
12	Wood Preservative	Gal	4.0	200.00	800.00
13	Cement	No	28.3	940.00	26,632.60
14	Sand	Cu.m	5.6	1,750.00	9,783.80
15	Aggregate (20mm)	Cu.m	0.8	3,600.00	2,736.00
16	Lime	Bushels	2.1	200.00	418.20
17	Re-bars 10mm	Bar	10.3	410.00	4,237.70
18	Nails	Kg	7.0	150.00	1,056.30
19	Door (3'-6"x6'-6") with frames in Class I timber	No	2.0	9000.00	18,000.00
20	Window (4'-0"x3'-6") with frames in Calss I timber	No	4.0	7000.00	28,000.00
21	Toilet door	No	1.0	4000.00	4,000.00
22	4" dia PVC pipe	m	2.5	100.00	250.00
23	4" dia PVC T	No	1.0	300.00	300.00
24	Squatting pan with footrest	No	1.0	1500.00	1,500.00
	Materails- Sub Total				**217,298.5**

25	Mason	Day	16.0	1,000.00	15,746.00
26	Capenter	Day	9.0	1,000.00	9,242.30
27	Labor	Day	42.0	800.00	33,377.60
	Labor- Sub Total				**58,365.80**
	Total				**275,664.00**

Bill of Quantities for Lockable House -Type: I

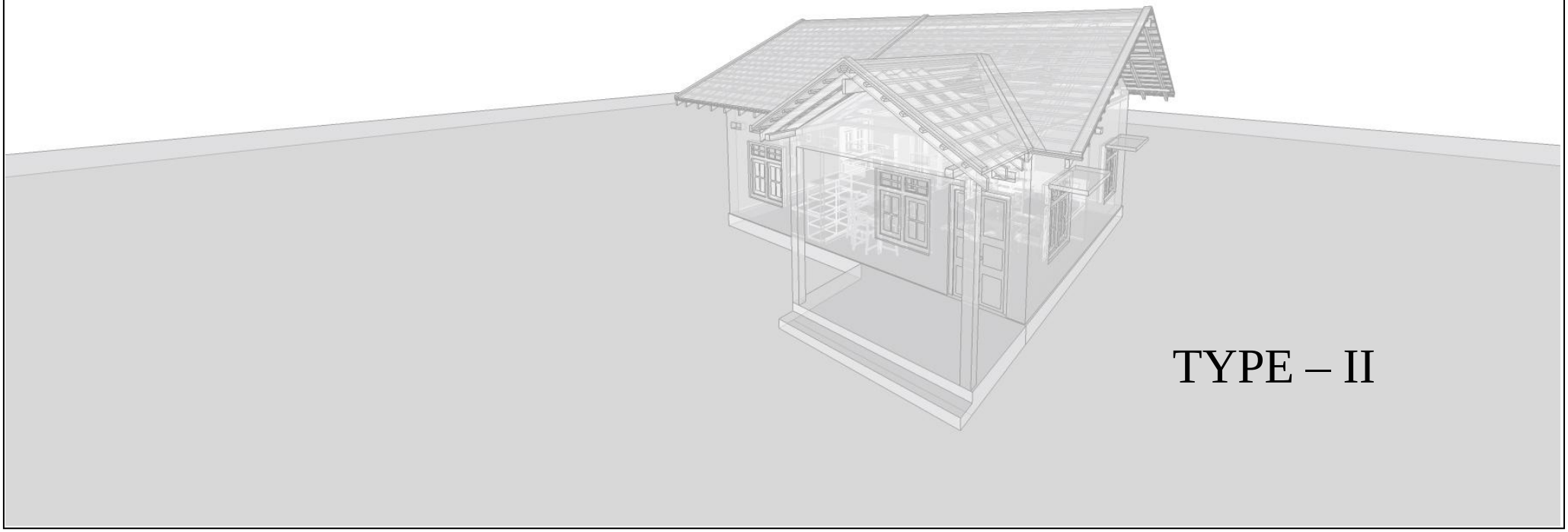
Floor area -565 sq.ft

Plumbing and Electricity Supply- Optional

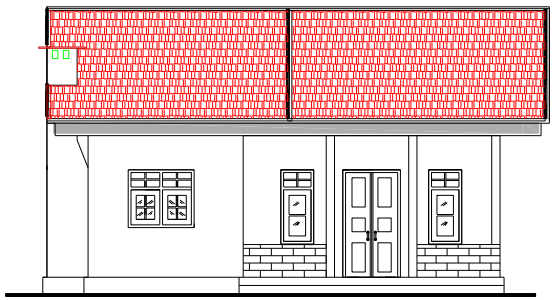
No	Description	Unit	Qty	Rate	Amount
1	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
2	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
3	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,745.00
4	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
5	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
6	Supply and install Tap	No	1.0	405.00	405.00
	Sub-Total				**17,780.00**

Materials and Labor Breakdown

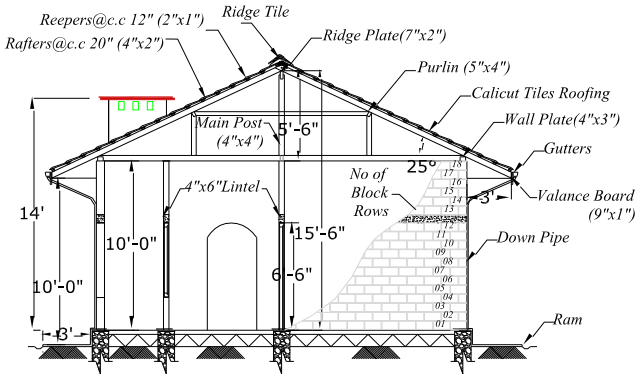
No	Items	Unit	Qty	Rate	Amount
1	7/.044 wire	m	5.0	100.00	500.00
2	Conduit pipe	m	18.0	35.00	630.00
3	Brass Screws 2"x10	No	2.0	3.00	6.00
4	Brass Screws 1 1/4"x6	No	2.0	5.00	10.00
5	ABC box 500 type	No	1.0	550.00	550.00
6	Board 10"x10"	No	1.0	140.00	140.00
7	Sun box	No	8.0	20.00	160.00
8	Nails and binding wire	Kg	1.0	150.00	150.00
9	500 L water tank	No	1.0	7,000.00	7000.00
10	32 mm Tired socket	No	1.0	125.00	125.00
11	32mm for socket	No	1.0	125.00	125.00
12	32 to 25 mm R/ socket	No	1.0	130.00	130.00
13	25mm L bow	No	2.0	45.00	90.00
14	25 mm Boll valve	No	1.0	450.00	450.00
15	25 mmTread socket	No	2.0	45.00	90.00
16	200 g Solvent cement	No	1.0	300.00	300.00
17	25mm End cap	No	1.0	41.00	41.00
18	25 mm pipe (type 1000)	m	10.0	90.00	900.00
19	25 to 12mm redusing T	No	1.0	135.00	135.00
20	12mm bip tap	No	1.0	250.00	250.00
	Materails- Sub Total				**11,782.00**
21	Electrician	Day	2.0	1,000.00	2,000.00
22	Plumber	Day	2.0	1,000.00	2,000.00
23	Labor	Day	2.5	800.00	2,000.00
	Labor- Sub Total				**6,000.00**
	Total				**17,780.00**



TYPE – II

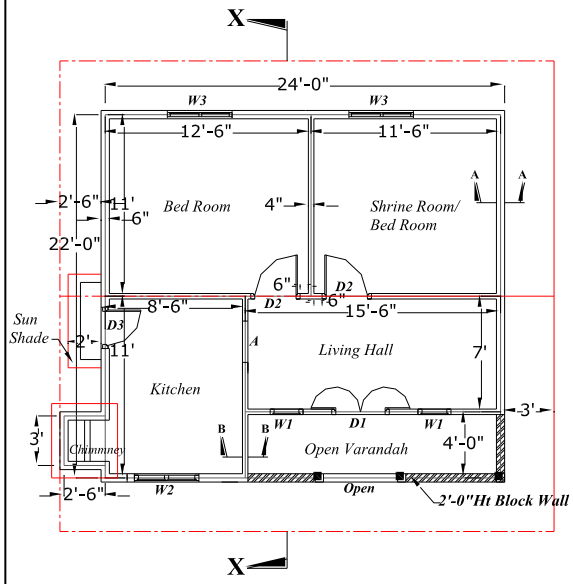


FRONT ELEVATION



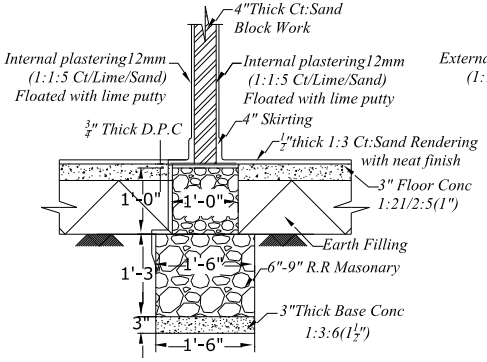
SECTION X-X

SCHEDULE OF DOORS & WINDOWS					Fixtures details [for a one item] [Heavy quality brass fitting]
S.No	Item	Size [External]	Description	Nos.	
01	D1	3'-6"x 6-'6"	Timber Panelled Door [2 Sash]	01	6 Nos.4"x 4"hinges, 1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4" barrel bolt
02	D2	3'-0"x 6-'6"	Timber Panelled Door	02	3 Nos. 2"x 4" hinges, 1 Nos. door handle 1 Nos. 2" barrel bolt[Note:1 Nos.lock for lockable room]
03	D3	2'-6"x 6'-6"	Braced & Batten Door	01	3 Nos. 2"x 4" tee hinges, 1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2" barrel bolt
04	W1	2'-0"x 4'-6"	Glazed Window	02	2 Nos.2"x 4"hinges, 1 Nos. casement lock, 1 Nos. casement stay, 1 Nos. pull ring
05	W2	4'-0"x 3'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring
06	W3	4'-0"x 4'-6"	Glazed Window [2 Sash]	02	4 Nos.2"x 4"hinges, 2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring
07	A	2'-6"x 6'-6"	Arch	01	



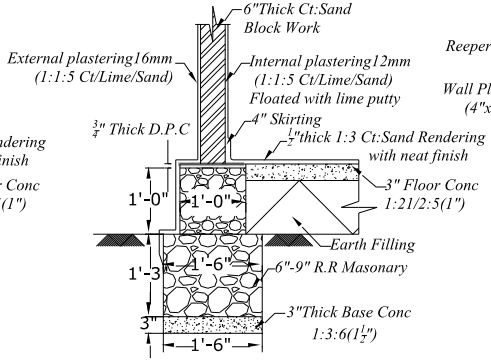
GROUND FLOOR PLAN

Scale :- 8'- 0" to an Inch



DETAILS OF INTERNAL WALL FOUNDATION SECTION B-B

Scale :- 2'- 0" to an Inch

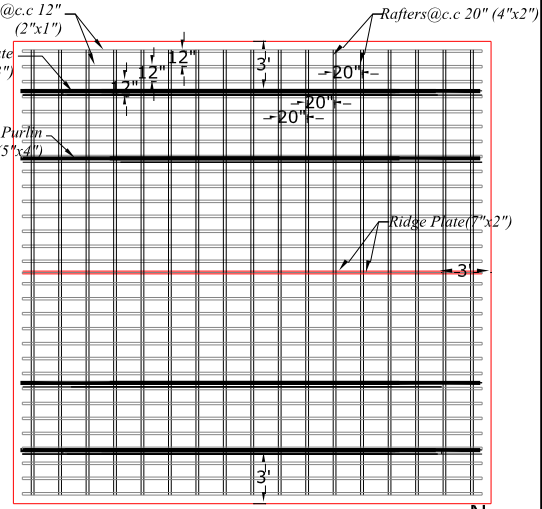


DETAILS OF EXTERNAL WALL FOUNDATION SECTION A-A

Scale :- 2'- 0" to an Inch

Note:-

This is a plan for guidance of the beneficiaries. The dimensions may be changed to suit beneficiary requirements without reducing the total floor area. Also materials for the construction indicated here may also be changed based on the technical specifications provided separately.



GABLE ROOF DETAILS

Scale :- 8'- 0" to an Inch

TYPE PLAN – II: PROPOSED HOUSE PLAN

DESIGNED BY:- UN HABITAT

INDIAN HOUSING PROJECT

PLINTH AREA:- 565 sq.ft

DRAWING No:- UNH/IHP/TP II/R001

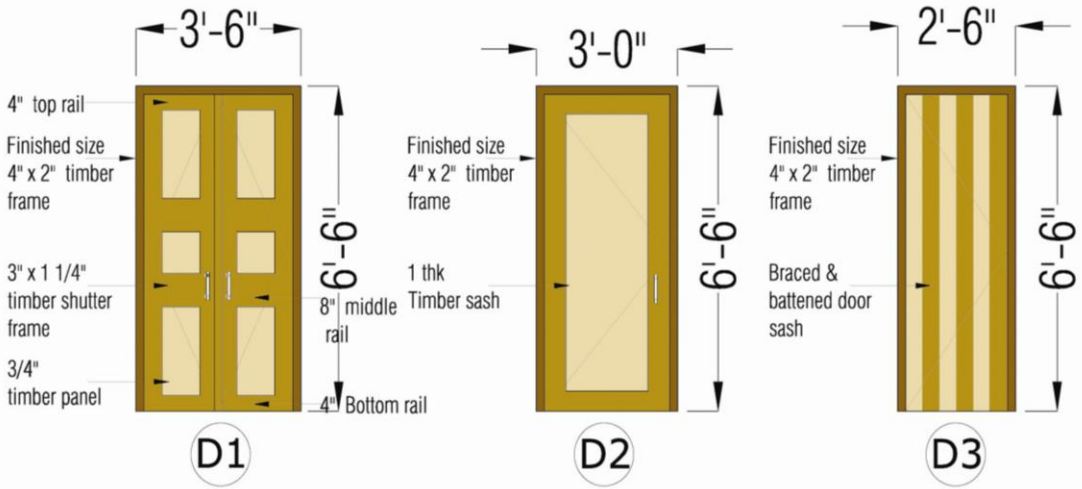
सत्यमेव जयते INDIA India-Sri Lanka Friendship	TYPE PLAN – II: FRONT VIEW	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP II/002

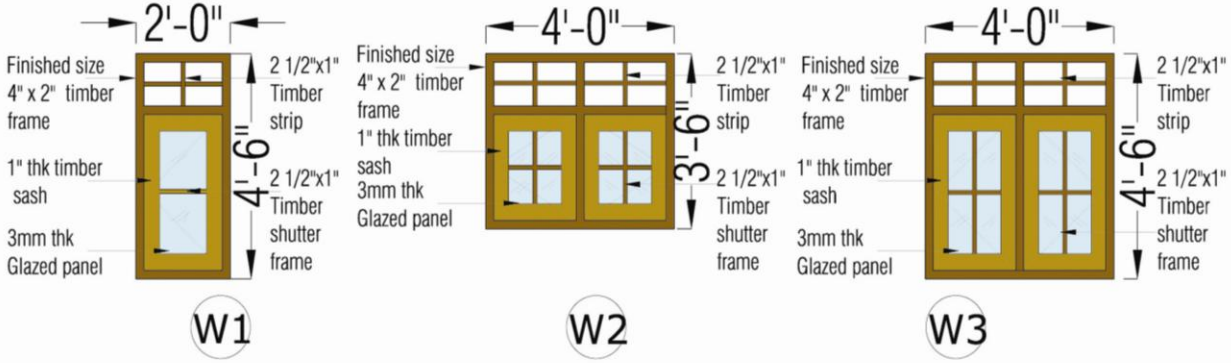
INDIA India-Sri Lanka Friendship	TYPE PLAN – II: FRONT VIEW WITHOUT EXTERNAL PLASTER	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP II/003

INDIA India-Sri Lanka Friendship	TYPE PLAN – II: REAR VIEW	DESIGNED BY:- UN HABITAT
सत्यमेव जयते	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP II/004

INDIA India-Sri Lanka Friendship	TYPE PLAN – II: INTERNEL ARRANGMENT OF ROOMS	DESIGNED BY:- UN HABITAT
सत्यमेव जयते	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP II/005

INDIA India-Sri Lanka Friendship	TYPE PLAN – II: PLAN VIEW	DESIGNED BY:- UN HABITAT
INDIAN HOUSING PROJECT	SCALE:- 4'- 0" = 1'0"	DRAWING No:- UNH/IHP/TP II/R006





SCHEDULE OF DOORS & WINDOWS					*Fixtures details* *[for a one item]* ***[Heavy quality brass fitting]***
S.No	*Item*	*Size [External]*	*Description*	*Nos.*	
01	***D1***	***3'-6"x 6-'6"***	*Timber Panelled Door [2 Sash]*	***01***	***6 Nos.4"x 4"hinges,*** *1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4" barrel bolt*
02	***D2***	***3'-0"x 6-'6"***	*Timber Panelled Door*	***02***	***3 Nos. 2"x 4" hinges,*** *1 Nos. door handle 1 Nos. 2" barrel bolt[Note:1 Nos.lock for lockable room]*
03	***D3***	***2'-6"x 6'-6"***	*Braced & Batten Door*	***01***	***3 Nos. 2"x 4" tee hinges,*** *1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2" barrel bolt*
04	***W1***	***2'-0"x 4'-6"***	*Glazed Window*	***02***	***2 Nos.2"x 4"hinges,*** *1 Nos. casement lock, 1 Nos. casement stay, 1 Nos. pull ring*
05	***W2***	***4'-0"x 3'-6"***	*Glazed Window [2 Sash]*	***01***	***4 Nos.2"x 4"hinges,*** *2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring*
06	***W3***	***4'-0"x 4'-6"***	*Glazed Window [2 Sash]*	***02***	***4 Nos.2"x 4"hinges,*** *2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring*

INDIA
India-Sri Lanka Friendship
सत्यमेव जयते

TYPE PLAN – II: DETAILS OF DOORS & WINDOWS

DESIGNED BY:-
UN HABITAT

INDIAN HOUSING PROJECT

SCALE:-
NOT TOSCALE

DRAWING No:-
UNH/IHP/TP II/007

Bill of Quantities for Lockable House -Type: II
Approximate Plinth area -565sq.ft
Implemented by : UN Habitat

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	13.6	500.00	6,800.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.6	9,000.00	14,400.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	13.1	7,500.00	98,250.00
4	Applying DPC on top of foundation with Bitumen	m	48.9	100.00	4,890.00
5	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	99.7	1,200.00	119,640.00
6	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	64.2	1,000.00	64,200.00
7	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	36.7	750.00	27,525.00
8	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	77.7	1,900.00	147,630.00
9	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	10.5	225.00	2,362.50
10	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
11	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	45.0	650.00	29,250.00
12	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	116.3	350.00	40,705.00
13	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	41.0	128.00	5,248.00
14	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	19.3	380.00	7,334.00
15	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00

16	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	5.0	7,000.00	35,000.00
17	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
18	Toilet door	No	1.0	4,000.00	4,000.00
19	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
20	Construction of 150mm dia size RC concrete columns with 75mm thick 600x600x150mm 1:2:4(20) concrete Footing, plastering . Rate to include 600mm deep excavation,10mm tor @ 150mm centres both ways in footing, 3 No. 10mm tor and 6mm stirrups at 200mm centres in column and shuttering. Column above ground level 3m all as per type plan.	No	3.0	5,368.00	16,104.00
Sub-total for lockable house including unskilled labour			**Rs**		**666,237.00**
	Electrical and Plumbing (Optional)				
21	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
22	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
23	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,746.00
24	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
25	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
26	Supply and install Tap	No	1.0	405.00	405.00
Sub-total for plumbing and electricity			**Rs**		**17,780.00**
Grand total for lockable house including plumbing and electricity			**Rs**		**684,017.00**

Note:

Lockable house including

1 Internal plastering and rendering for one room , living room and Kitchen
2 External face finished with neat pointing
3 External front doors and windows fixing
4 Cubical (1x1.2x1.8m) with septic tank and soakage pit (1.5x1x1.5m)
5 Electrical and Plumbing (Optional)

Prepared: **28.08.2012**
Revised: **02.01.2013**

Bill of Quantities for Lockable House -Type: II

Approximate Plinth area -565 sq.ft

Construction Milestone -I (Foundation)

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	13.6	500.00	6,800.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.6	9,000.00	14,400.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	13.1	7,500.00	98,250.00
4	Applying DPC on top of foundation with Bitumen	m	48.9	100.00	4,890.00
	Sub-Total				**124,340.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	30.5	940.00	28,665.00
2	Sand	Cu.m	4.8	1,750.00	8,459.80
3	Aggregate (38mm)	Cu.m	1.5	3,500.00	5,144.90
4	Rubble	Cu.m	17.0	1,700.00	28,951.00
5	Bitumen/Tar	lit	9.2	130.00	1,199.60
	Materails- Sub Total				**72,420.30**
6	Mason	Day	21.0	1,000.00	20,706.60
7	Labor	Day	39.0	800.00	31,214.90
	Labor- Sub Total				**51,921.40**
Total					**124,340.00**

Bill of Quantities for Lockable House -Type: II

Approximate Plinth area -565 sq.ft

Construction Milestone -II (Wall/Superstructure)

No	Description	Unit	Qty	Rate	Amount
1	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	99.7	1,200.00	119,640.00
2	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	64.2	1,000.00	64,200.00
3	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	36.7	750.00	27,525.00
4	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	10.5	225.00	2,362.50
5	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	45.0	650.00	29,250.00
6	Construction of 150mm dia size RC concrete columns with 75mm thick 600x600x150mm 1:2:4(20) concrete Footing, plastering . Rate to include 600mm deep excavation,10mm tor @ 150mm centres both ways in footing, 3 No. 10mm tor and 6mm stirrups at 200mm centres in column and shuttering. Column above ground level 3m all as per type plan.	No	3.0	5,368.00	16,104.00
	Sub-Total				**259,082.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	28.5	940.00	26,763.00
2	Sand	Cu.m	4.5	1,750.00	7,788.70
3	Aggregate (20mm)	Cu.m	3.8	3,600.00	13,761.60
4	150mm Cement Block	No	1878.1	46.00	86,392.40
5	100mm Cement Block	No	1209.4	36.00	43,537.10
6	Re-bars 10mm	Bar	25.0	410.00	10,260.80
7	Binding wire	Kg	4.0	150.00	600.00
8	Formwork	Sq.m	17.2	50.00	870.10
9	Nails	Kg	6.0	150.00	902.20
	Materails- Sub Total				**190,876.00**
10	Mason	Day	25.0	1,000.00	25,286.60
11	Carpenter	Day	6.0	1,000.00	6,008.20
12	Labor	Day	46.0	800.00	36,912.80
	Labor- Sub Total				**68,207.60**
Total					**259,082.00**

Bill of Quantities for Lockable House -Type: II

Approximate Plinth area -565 sq.ft

Construction Milestone -III (Roof and Finishing)

No	Description	Unit	Qty	Rate	Amount
1	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	77.7	1,900.00	147,630.00
2	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
3	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	116.3	350.00	40,705.00
4	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	41.0	128.00	5,248.00
5	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	19.3	380.00	7,334.00
6	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00
7	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	5.0	7,000.00	35,000.00
8	Toilet door	No	1.0	4,000.00	4,000.00
9	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
10	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
	Sub-Total				**282,815.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	100x75mm-wall plate 4.65m	Nos	4.0	1,800.00	7,200.00
2	125x100mm- 4.65m Purlin	Nos	4.0	2,000.00	8,000.00
3	150x100mm-3.65m Tie beam	Nos	1.0	3,100.00	3,100.00
4	125x75mm- 0.9m Strut	Nos	1.0	450.00	450.00
5	175x50mm-3.65m Ridge Plate	Nos	2.0	2,100.00	4,200.00
6	50x25mm Reeper	m	355.0	30.00	10,650.00
7	100x50mm-2.7m -Rafter	Nos	36.0	625.00	22,500.00
8	100x50mm-2.1m -Rafter	Nos	36.0	500.00	18,000.00
9	Nails and binding wire	Kg	10.0	150.00	1,500.00
10	Flat Tiles	Nos	1200.0	35.00	42,000.00
11	Ridge Tiles	Nos	32.0	62.00	1,984.00
12	Wood Preservative	Gal	4.0	200.00	800.00
13	Cement	No	28.0	940.00	26,295.60
14	Sand	Cu.m	5.5	1,750.00	9,574.70
15	Aggregate (20mm)	Cu.m	0.8	3,600.00	2,736.00
16	Lime	Bushels	2.1	200.00	418.20
17	Re-bars 10mm	Bar	10.3	410.00	4,237.70
18	Nails	Kg	7.0	150.00	1,049.30
19	Door (3'-6"x6'-6") with frames in Class I timber	No	2.0	9000.00	18,000.00
20	Window (4'-0"x3'-6") with frames in Calss I timber	No	5.0	7000.00	35,000.00
21	Toilet door	No	1.0	4000.00	4,000.00
22	4" dia PVC pipe	m	2.5	100.00	250.00
23	4" dia PVC T	No	1.0	300.00	300.00

24	Squatting pan with footrest	No	1.0	1500.00	1,500.00
	Materails- Sub Total				**223,745.50**
25	Mason	Day	16.0	1,000.00	16,447.30
26	Capenter	Day	9.0	1,000.00	9,242.30
27	Labor	Day	42.0	800.00	33,379.70
	Labor- Sub Total				**59,069.20**
Total					**282,815.00**

Bill of Quantities for Lockable House -Type: II

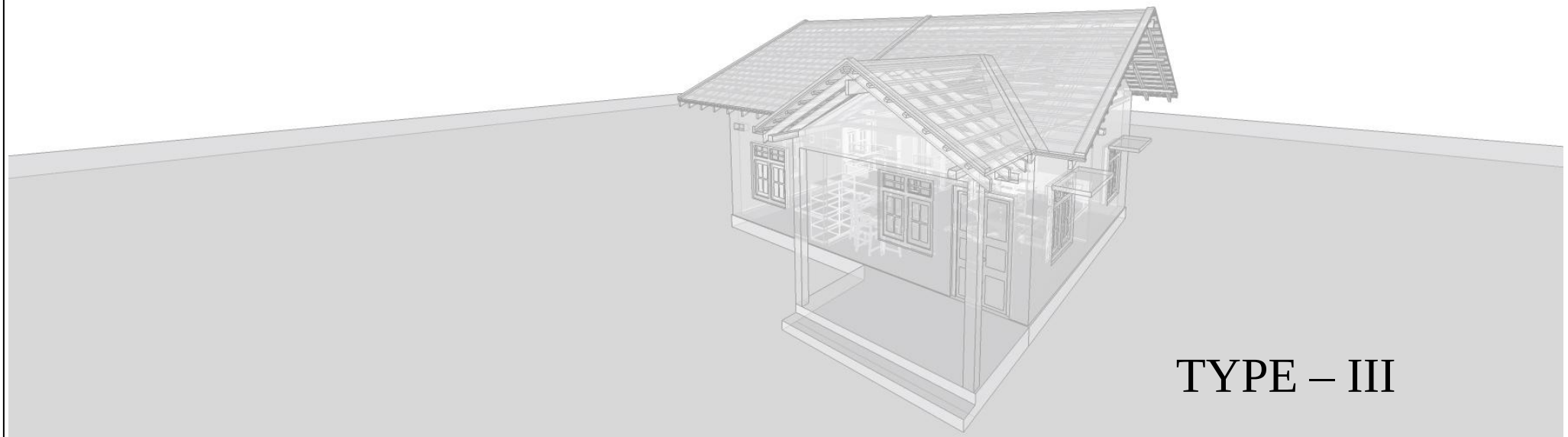
Approximate Plinth area -565sq.ft

Plumbing and Electricity Supply- Optional

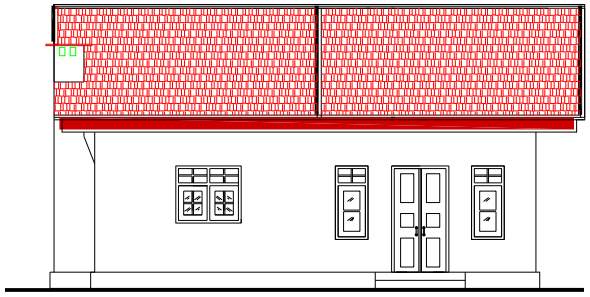
No	Description	Unit	Qty	Rate	Amount
1	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
2	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
3	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,745.00
4	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
5	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
6	Supply and install Tap	No	1.0	405.00	405.00
	Sub-Total				**17,780.00**

Materials and Labor Breakdown

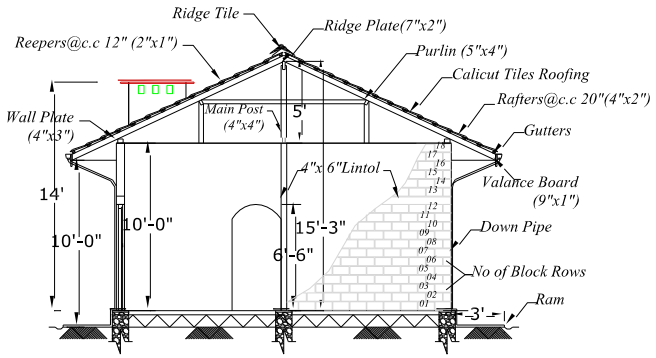
No	Items	Unit	Qty	Rate	Amount
1	7/.044 wire	m	5.0	100.00	500.00
2	Conduit pipe	m	18.0	35.00	630.00
3	Brass Screws 2"x10	No	2.0	3.00	6.00
4	Brass Screws 1 1/4"x6	No	2.0	5.00	10.00
5	ABC box 500 type	No	1.0	550.00	550.00
6	Board 10"x10"	No	1.0	140.00	140.00
7	Sun box	No	8.0	20.00	160.00
8	Nails and binding wire	Kg	1.0	150.00	150.00
9	500 L water tank	No	1.0	7,000.00	7000.00
10	32 mm Tired socket	No	1.0	125.00	125.00
11	32mm for socket	No	1.0	125.00	125.00
12	32 to 25 mm R/ socket	No	1.0	130.00	130.00
13	25mm L bow	No	2.0	45.00	90.00
14	25 mm Boll valve	No	1.0	450.00	450.00
15	25 mmTread socket	No	2.0	45.00	90.00
16	200 g Solvent cement	No	1.0	300.00	300.00
17	25mm End cap	No	1.0	41.00	41.00
18	25 mm pipe (type 1000)	m	10.0	90.00	900.00
19	25 to 12mm redusing T	No	1.0	135.00	135.00
20	12mm bip tap	No	1.0	250.00	250.00
	Materails- Sub Total				**11,782.00**
21	Electrician	Day	2.0	1,000.00	2,000.00
22	Plumber	Day	2.0	1,000.00	2,000.00
23	Labor	Day	2.5	800.00	2,000.00
	Labor- Sub Total				**6,000.00**
	Total				**17,780.00**



TYPE – III

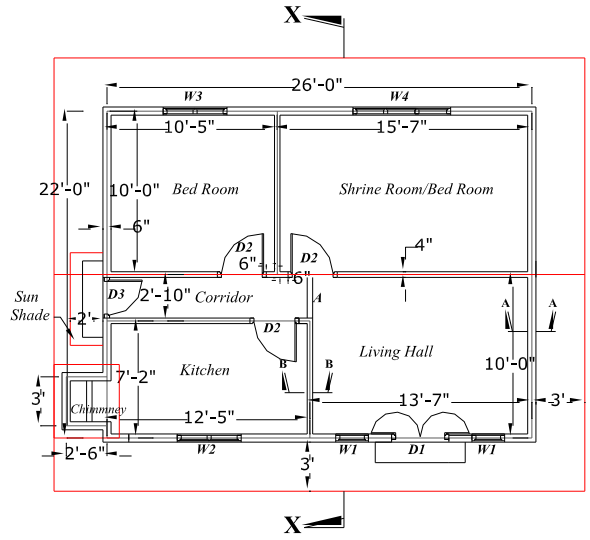


FRONT ELEVATION



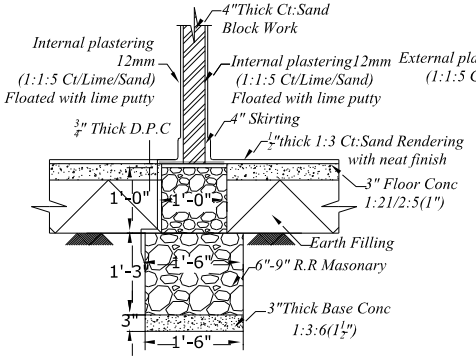
SECTION X-X

SCHEDULE OF DOORS & WINDOWS					Fixtures details [for a one item] [Heavy quality brass fitting]
S.No	Item	Size [External]	Description	Nos.	
01	D1	3'-6"x 6'-6"	Timber Panelled Door [2 Sash]	01	6 Nos.4"x 4"hinges, 1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4' barrel bolt
02	D2	3'-0"x 6'-6"	Timber Panelled Door	03	3 Nos. 2"x 4" hinges, 1 Nos. door handle 1 Nos. 2' barrel bolt[Note:1 Nos.lock for lockable room]
03	D3	2'-6"x 6'-6"	Braced & Batten Door	01	3 Nos. 2"x 4" tee hinges, 1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2' barrel bolt
04	W1	2'-0"x 4'-6"	Glazed Window	02	2 Nos.2"x 4"hinges, 1 Nos. casement lock, 1 Nos. casement stay, 1 Nos. pull ring
05	W2	4'-0"x 3'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring
06	W3	4'-0"x 4'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring
07	W4	6'-0"x 4'-6"	Glazed Window [3 Sash]	01	6 Nos.2"x 4"hinges, 3Nos. casement lock, 3Nos. casement stay, 3Nos. pull ring
08	A	2'-6"x 6'-6"	Arch	01	



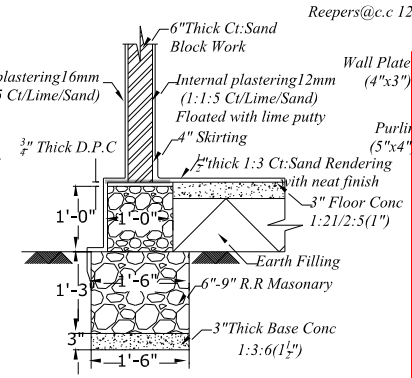
GROUND FLOOR PLAN

Scale :- 8'- 0" to an Inch



DETAILS OF INTERNAL WALL FOUNDATION SECTION B-B

Scale :- 2'- 0" to an Inch

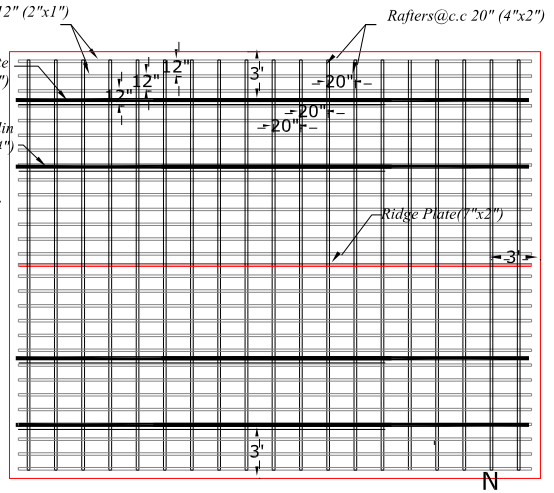


DETAILS OF EXTERNAL WALL FOUNDATION SECTION A-A

Scale :- 2'- 0" to an Inch

Note:-

This is a plan for guidance of the beneficiaries. The dimensions may be changed to suit beneficiary requirements without reducing the total floor area. Also materials for the construction indicated here may also be changed based on the technical specifications provided separately.



GABLE ROOF DETAILS

Scale :- 8'- 0" to an Inch

TYPE PLAN – III: PROPOSED HOUSE PLAN

DESIGNED BY:- UN HABITAT

INDIAN HOUSING PROJECT

PLINTH AREA:- 611 sq.ft

DRAWING No:- UNH/IHP/TP III/R001

INDIA India-Sri Lanka Friendship	TYPE PLAN – III: FRONT VIEW	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP III/002

INDIA
India-Sri Lanka Friendship
ඉන්දු-ශ්‍රී ලංකා මිත්‍රත්වය
இந்திய-இலங்கை நட்புறவு
सत्यमेव जयते

TYPE PLAN – III: FRONT VIEW WITHOUT EXTERNAL PLASTER

INDIAN HOUSING PROJECT

DESIGNED BY:-
UN HABITAT

DRAWING No:-
UNH/IHP/TP III/003

INDIA India-Sri Lanka Friendship	TYPE PLAN – III: REAR VIEW	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP III/004

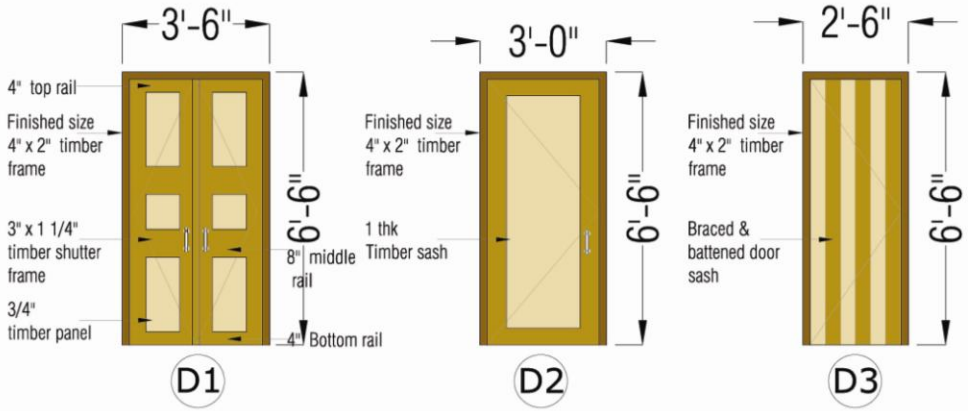
TYPE PLAN – III: INTERNEL ARRANGMENT OF ROOMS

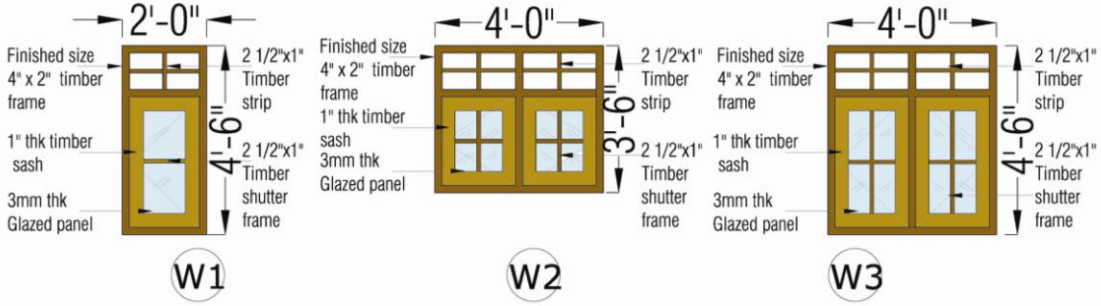
INDIAN HOUSING PROJECT

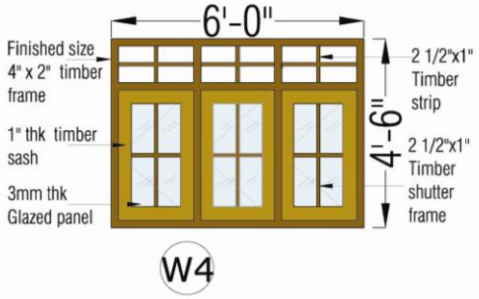
DESIGNED BY:-
UN HABITAT

DRAWING No:-
UNH/IHP/TP III/005

INDIA India-Sri Lanka Friendship	TYPE PLAN – III: PLAN VIEW		DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	SCALE:- 4'- 0" = 1'0"	DRAWING No:- UNH/IHP/TP III/R006







SCHEDULE OF DOORS & WINDOWS					Fixtures details [for a one item] [Heavy quality brass fitting]
S.No	Item	Size [External]	Description	Nos.	
01	D1	3'-6"x 6-'6"	Timber Panelled Door [2 Sash]	01	6 Nos.4"x 4"hinges, 1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4" barrel bolt
02	D2	3'-0"x 6-'6"	Timber Panelled Door	03	3 Nos. 2"x 4" hinges, 1 Nos. door handle 1 Nos. 2" barrel bolt[Note:1 Nos.lock for lockable room]
03	D3	2'-6"x 6'-6"	Braced & Batten Door	01	3 Nos. 2"x 4" tee hinges, 1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2" barrel bolt
04	W1	2'-0"x 4'-6"	Glazed Window	02	2 Nos.2"x 4"hinges, 1 Nos. casement lock, 1 Nos. casement stay, 1 Nos. pull ring
05	W2	4'-0"x 3'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring
06	W3	4'-0"x 4'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring
07	W4	6'-0"x 4'-6"	Glazed Window [3 Sash]	01	6 Nos.2"x 4"hinges, 3Nos. casement lock, 3Nos. casement stay, 3Nos. pull ring

INDIA
India-Sri Lanka Friendship
सत्यमेव जयते

TYPE PLAN – III: DETAILS OF DOORS & WINDOWS

DESIGNED BY:-
UN HABITAT

INDIAN HOUSING PROJECT

SCALE:-
NOT TOSCALE

DRAWING No:-
UNH/IHP/TP III/007

Bill of Quantities for Lockable House Type: III

Approximate Plinth area -611 sq.ft

Implemented by : UN Habitat

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	14.2	500.00	7,100.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.7	9,000.00	15,300.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	13.8	7,500.00	103,500.00
4	Applying DPC on top of foundation with Bitumen	m	51.5	100.00	5,150.00
5	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	99.7	1,200.00	119,640.00
6	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	62.3	1,000.00	62,300.00
7	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	39.0	750.00	29,250.00
8	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	85.1	1,900.00	161,690.00
9	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	11.4	225.00	2,565.00
10	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
11	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	44.2	650.00	28,730.00
12	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	128.7	350.00	45,045.00
13	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	24.3	128.00	3,122.42
14	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	24.9	380.00	9,462.00

15	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00
16	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	5.0	7,000.00	35,000.00
17	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
18	Toilet door	No	1.0	4,000.00	4,000.00
19	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
Sub-total for lockable house including unskilled labour			**Rs**		**674,752.00**
	Electrical and Plumbing (Optional)				
20	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
21	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
22	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,746.00
23	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
24	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
25	Supply and install Tap	No	1.0	405.00	405.00
Sub-total for plumbing and electricity			**Rs**		**17,781.00**
Grand total for lockable house including plumbing and electricity			**Rs**		**692,533.00**

Note:

Lockable house including

1 Internal plastering and rendering for one room , living room and Kitchen
2 External face finished with neat pointing
3 External front doors and windows fixing
4 Cubical (1x1.2x1.8m) with septic tank and soakage pit (1.5x1x1.5m)
5 Electrical and Plumbing (Optional)

Prepared: 28.08.2012
Revised 29.11.2012

Bill of Quantities for Lockable House -Type: III

Approximate Plinth area -611 sq.ft

Construction Milestone -I (Foundation)

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	14.20	500.00	7,100.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.70	9,000.00	15,300.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	13.80	7,500.00	103,500.00
4	Applying DPC on top of foundation with Bitumen	m	51.50	100.00	5,150.00
	Sub-Total				**131,050.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	32.2	940.00	30,259.40
2	Sand	Cu.m	5.1	1,750.00	8,925.30
3	Aggregate (38mm)	Cu.m	1.6	3,500.00	5,466.40
4	Rubble	Cu.m	17.9	1,700.00	30,498.00
5	Bitumen/Tar	lit	9.5	130.00	1,248.20
	Materails- Sub Total				**76,397.30**
6	Mason	Day	22	1,000.00	21,814.20
7	Labor	Day	41	800.00	32,840.80
	Labor- Sub Total				**54,654.90**
	Total				**131,050.00**

Bill of Quantities for Lockable House -Type: III

Approximate Plinth area -611sq.ft

Construction Milestone -II (Wall/Superstructure)

No	Description	Unit	Qty	Rate	Amount
1	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	99.7	1,200.00	119,640.00
2	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	62.3	1,000.00	62,300.00
3	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	39.0	750.00	29,250.00
4	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	11.4	225.00	2,565.00
5	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	44.2	650.00	28,730.00
	Sub-Total				**242,485.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	28.3	940.00	26,620.50
2	Sand	Cu.m	4.4	1,750.00	7,736.90
3	Aggregate (20mm)	Cu.m	3.8	3,600.00	13,726.10
4	150mm Cement Block	No	1878.1	46.00	86,392.40
5	100mm Cement Block	No	1173.6	36.00	42,248.70
6	Re-bars 10mm	Bar	12.8	410.00	5,239.80
7	Binding wire	Kg	3.1	150.00	465.00
8	Formwork	Sq.m	16.6	50.00	831.10
9	Nails	Kg	3.9	150.00	584.50

	Materails- Sub Total				**183,844.90**
10	Mason	Day	19.0	1,000.00	19,259.30
11	Carpenter	Day	2.0	1,000.00	2,196.70
12	Labor	Day	46.0	800.00	37,185.80
	Labor- Sub Total				**58,641.80**
Total					**242,485.00**

Bill of Quantities for Lockable House -Type: III

Approximate Plinth area -611 sq.ft

Construction Milestone -III (Roof and Finishing)

No	Description	Unit	Qty	Rate	Amount
1	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	85.1	1,900.00	161,690.00
2	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
3	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	128.7	350.00	45,045.00
4	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	24.39	128.00	3,122.42
5	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	24.9	380.00	9,462.00
6	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00
7	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	5.0	7,000.00	35,000.00
8	Toilet door	No	1.0	4,000.00	4,000.00
9	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
10	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
	Sub-Total				**301,217.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	100x75mm-wall plate 4.65m	Nos	4.0	1,800.00	7,200.00
2	125x100mm- 4.65m Purlin	Nos	4.0	2,000.00	8,000.00
3	150x100mm-3.65m Tie beam	Nos	2.0	3,100.00	6,200.00
4	125x75mm- 0.9m Strut	Nos	2.0	450.00	900.00
5	175x50mm-3.65m Ridge Plate	Nos	2.0	2,100.00	4,200.00
6	50x25mm Reeper	m	350.0	30.00	10,500.00
7	100x50mm-2.7m -Rafter	Nos	37.0	625.00	23,125.00
8	100x50mm-2.1m -Rafter	Nos	37.0	500.00	18,500.00
9	Nails and binding wire	Kg	14.0	150.00	2,100.00
10	Flat Tiles	Nos	1300.0	35.00	45,500.00
11	Ridge Tiles	Nos	35.0	62.00	2,170.00
12	Wood Preservative	Gal	5.0	200.00	1,000.00
13	Cement	No	30.3	940.00	28,462.00
14	Sand	Cu.m	6.0	1,750.00	10,478.70
15	Aggregate (20mm)	Cu.m	0.8	3,600.00	2,736.00
16	Lime	Bushels	2.3	200.00	458.00
17	Re-bars 10mm	Bar	10.3	410.00	4,237.70
18	Nails	Kg	7.9	150.00	1,199.70
19	Door (3'-6"x6'-6") with frames in Class I timber	No	2.0	9000.00	18,000.00
20	Window (4'-0"x3'-6") with frames in Calss I timber	No	5.0	7000.00	35,000.00
21	Toilet door	No	1.0	4000.00	4,000.00
22	4" dia PVC pipe	m	2.5	100.00	250.00
23	4" dia PVC T	No	1.0	300.00	300.00
24	Squatting pan with footrest	No	1.0	1500.00	1,500.00

	Materails- Sub Total				**236,017.00**
25	Mason	Day	18.0	1,000.00	18,250.40
26	Capenter	Day	11.0	1,000.00	10,503.40
27	Labor	Day	46.0	800.00	36,446.10
	Labor- Sub Total				**65,200.00**
Total					**301,217.00**

Bill of Quantities for Lockable House -Type: III

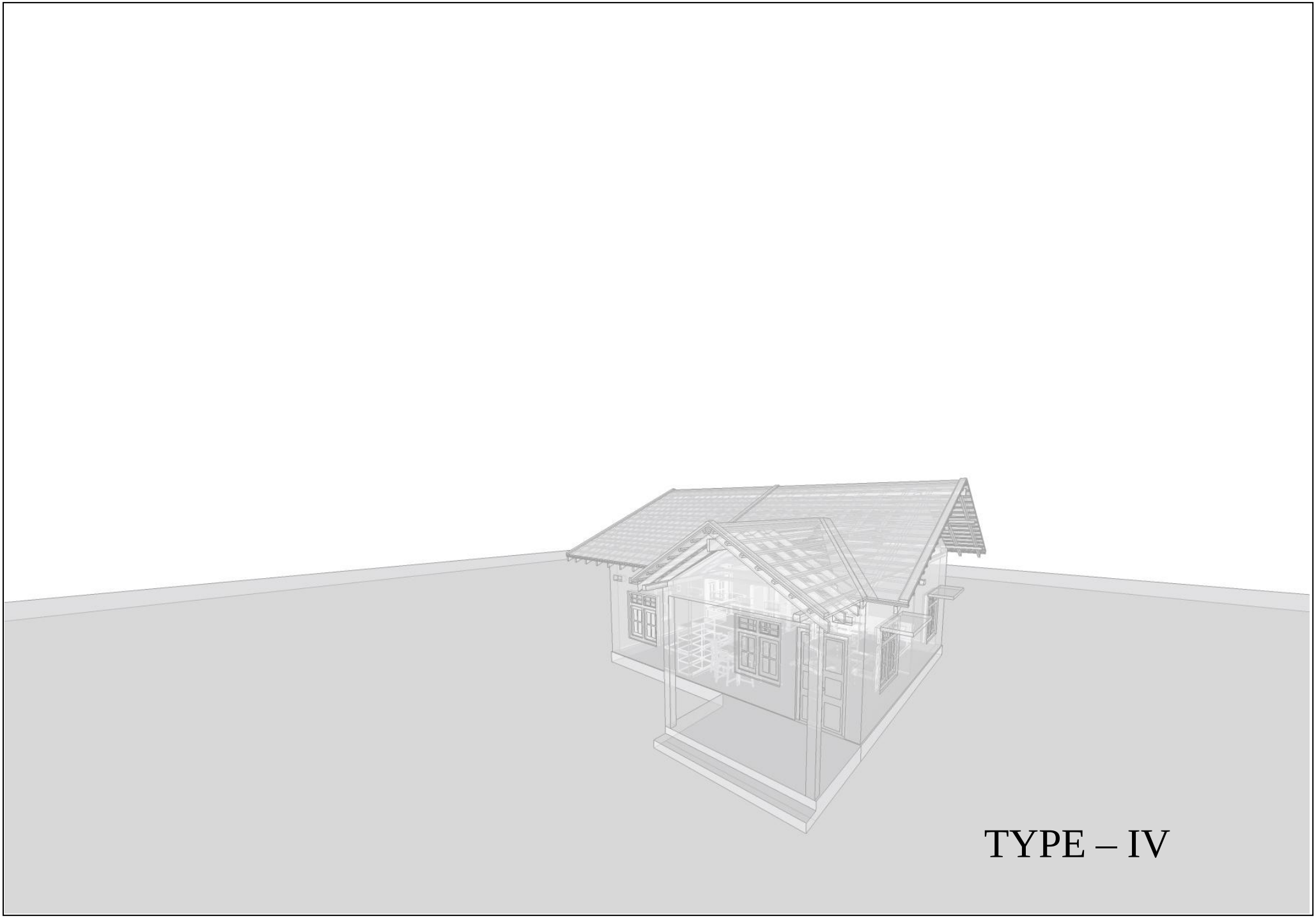
Approximate Plinth area -611 sq.ft

Plumbing and Electricity Supply- Optional

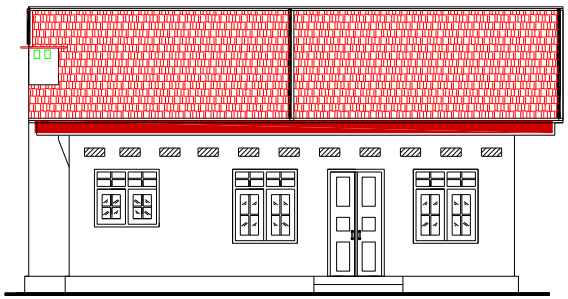
No	Description	Unit	Qty	Rate	Amount
1	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
2	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
3	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,746.00
4	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
5	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
6	Supply and install Tap	No	1.0	405.00	405.00
	Sub-Total				**17,781.00**

Materials and Labor Breakdown

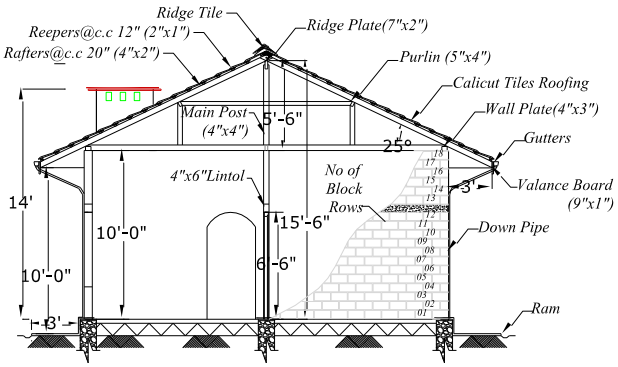
No	Items	Unit	Qty	Rate	Amount
1	7/.044 wire	m	5.0	100.00	500.00
2	Conduit pipe	m	18.0	35.00	630.00
3	Brass Screws 2"x10	No	2.0	3.00	6.00
4	Brass Screws 1 1/4"x6	No	2.0	5.00	10.00
5	ABC box 500 type	No	1.0	550.00	550.00
6	Board 10"x10"	No	1.0	140.00	140.00
7	Sun box	No	8.0	20.00	160.00
8	Nails and binding wire	Kg	1.0	150.00	150.00
9	500 L water tank	No	1.0	7,000.00	7000.00
10	32 mm Tired socket	No	1.0	125.00	125.00
11	32mm for socket	No	1.0	125.00	125.00
12	32 to 25 mm R/ socket	No	1.0	130.00	130.00
13	25mm L bow	No	2.0	45.00	90.00
14	25 mm Boll valve	No	1.0	450.00	450.00
15	25 mmTread socket	No	2.0	45.00	90.00
16	200 g Solvent cement	No	1.0	300.00	300.00
17	25mm End cap	No	1.0	41.00	42.00
18	25 mm pipe (type 1000)	m	10.0	90.00	900.00
19	25 to 12mm redusing T	No	1.0	135.00	135.00
20	12mm bip tap	No	1.0	250.00	250.00
	Materails- Sub Total				**11,783.00**
21	Electrician	Day	2.0	1,000.00	2,000.00
22	Plumber	Day	2.0	1,000.00	2,000.00
23	Labor	Day	2.5	800.00	2,000.00
	Labor- Sub Total				**6,000.00**
	Total				**17,781.00**



TYPE – IV

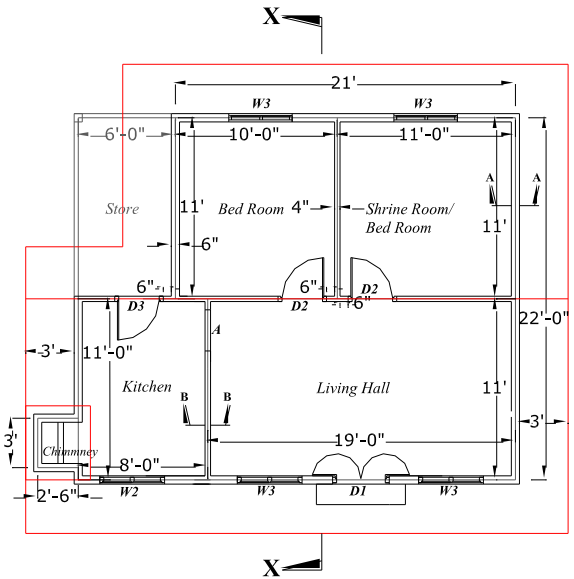


FRONT ELEVATION



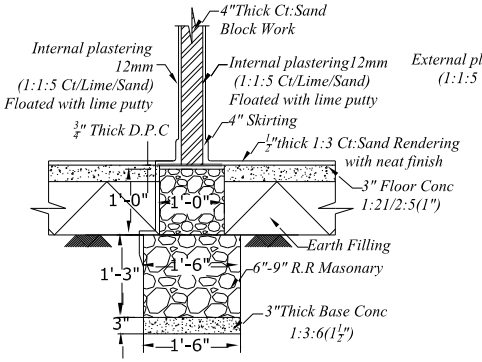
SECTION X-X

SCHEDULE OF DOORS & WINDOWS					Fixtures details [for a one item] [Heavy quality brass fitting]
S.No	Item	Size [External]	Description	Nos.	
01	D1	3'-6"x 6-'6"	Timber Panelled Door [2 Sash]	01	6 Nos.4"x 4"hinges, 1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4' barrel bolt
02	D2	3'-0"x 6-'6"	Timber Panelled Door	02	3 Nos. 2"x 4" hinges, 1 Nos. door handle 1 Nos. 2' barrel bolt[Note:1 Nos.lock for lockable room]
03	D3	2'-6"x 6'-6"	Braced & Batten Door	01	3 Nos. 2"x 4" tee hinges, 1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2' barrel bolt
04	W2	4'-0"x 3'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring
05	W3	4'-0"x 4'-6"	Glazed Window [2 Sash]	04	4 Nos.2"x 4"hinges, 2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring
06	A	2'-6"x 6'-6"	Arch	01	



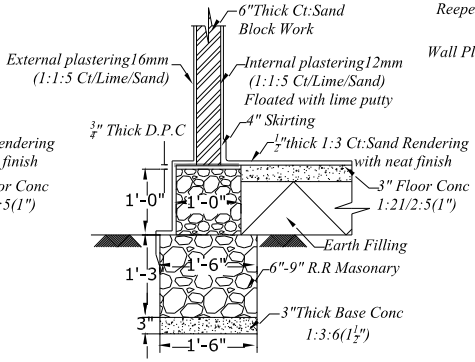
GROUND FLOOR PLAN

Scale :- 8'- 0" to an Inch



DETAILS OF INTERNAL WALL FOUNDATION SECTION B-B

Scale :- 2'- 0" to an Inch

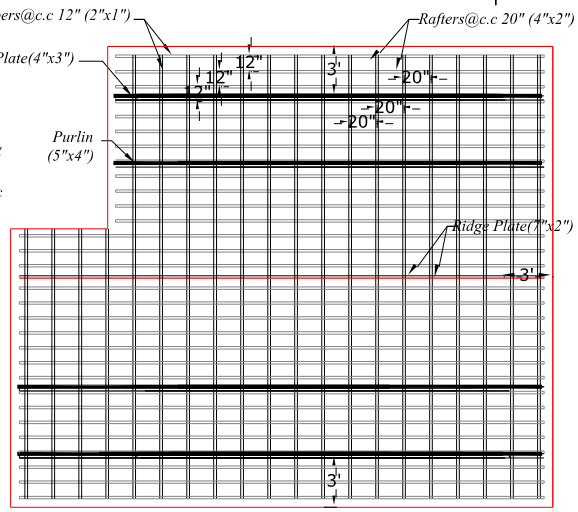


DETAILS OF EXTERNAL WALL FOUNDATION SECTION A-A

Scale :- 2'- 0" to an Inch

Note:-

This is a plan for guidance of the beneficiaries. The dimensions may be changed to suit beneficiary requirements without reducing the total floor area. Also materials for the construction indicated here may also be changed based on the technical specifications provided separately.



GABLE ROOF DETAILS

Scale :- 8'- 0" to an Inch

TYPE PLAN – IV: PROPOSED HOUSE PLAN

INDIAN HOUSING PROJECT

PLINTH AREA:- 567 sq.ft

DESIGNED BY:- UN HABITAT

DRAWING No:- UNH/IHP/TP IV/R001

INDIA India-Sri Lanka Friendship	TYPE PLAN – IV: FRONT VIEW	DESIGNED BY:- UN HABITAT
सत्यमेव जयते	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP IV/002

सत्यमेव जयते INDIA India-Sri Lanka Friendship	TYPE PLAN – IV: FRONT VIEW WITHOUT EXTERNAL PLASTER	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP IV/003

सत्यमेव जयते

INDIA
India-Sri Lanka Friendship
இந்தியா-இலங்கை நட்புறவு

TYPE PLAN – IV: REAR VIEW

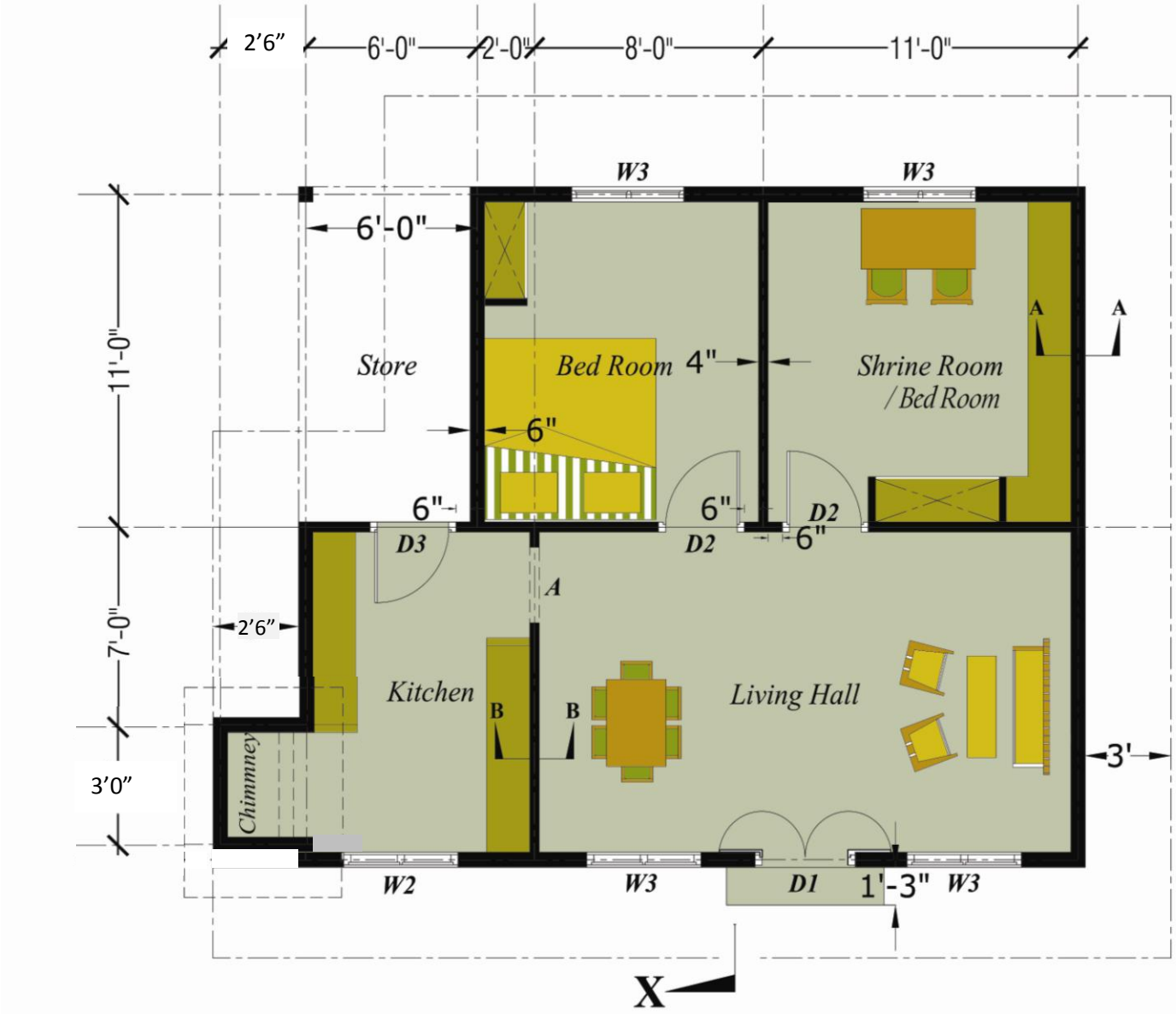
DESIGNED BY:-

UN HABITAT

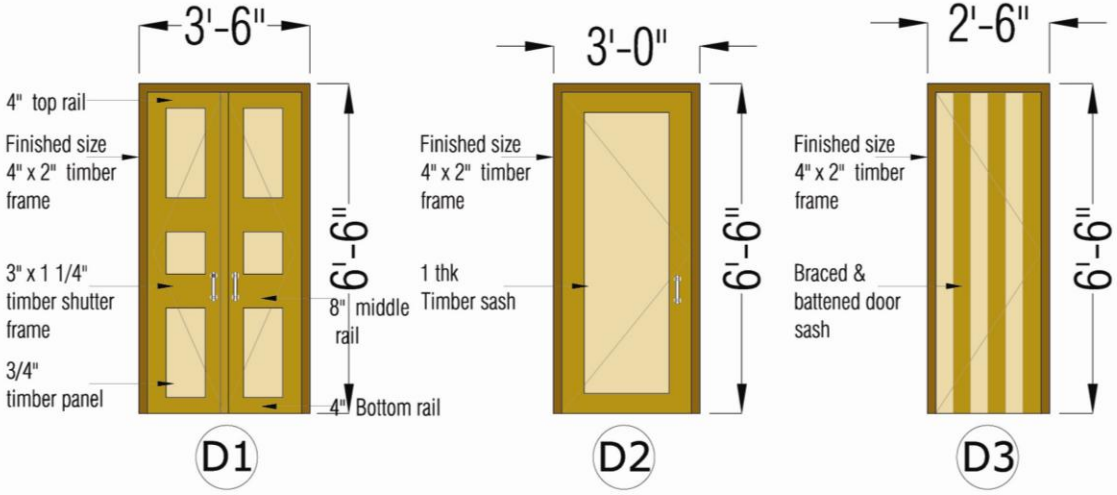
INDIAN HOUSING PROJECT

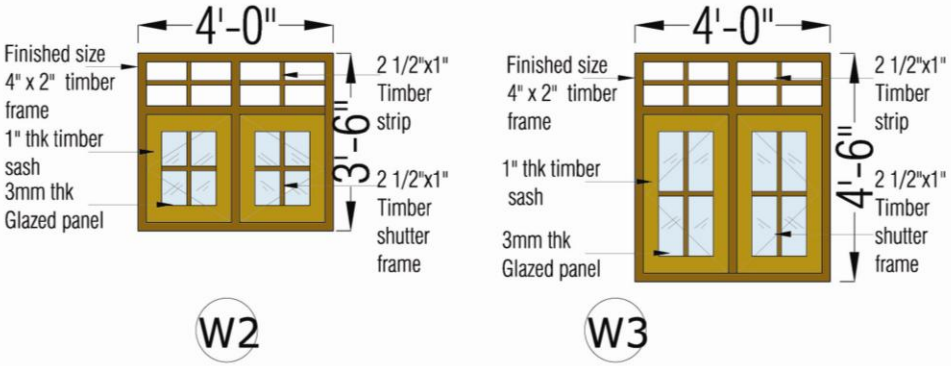
DRAWING No:-
UNH/IHP/TP IV/004

INDIA India-Sri Lanka Friendship	TYPE PLAN – IV: INTERNEL ARRANGMENT OF ROOMS	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP IV/005



	TYPE PLAN – IV: PLAN VIEW	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	SCALE:- 4'- 0" = 1'0" / DRAWING No:- UNH/IHP/TP IV/R006





SCHEDULE OF DOORS & WINDOWS					Fixtures details [for a one item] [Heavy quality brass fitting]
S.No	Item	Size [External]	Description	Nos.	
01	D1	3'-6"x 6-'6"	Timber Panelled Door [2 Sash]	01	6 Nos.4"x 4"hinges, 1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4" barrel bolt
02	D2	3'-0"x 6-'6"	Timber Panelled Door	02	3 Nos. 2"x 4" hinges, 1 Nos. door handle 1 Nos. 2" barrel bolt[Note:1 Nos.lock for lockable room]
03	D3	2'-6"x 6'-6"	Braced & Batten Door	01	3 Nos. 2"x 4" tee hinges, 1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2" barrel bolt
04	W2	4'-0"x 3'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring
05	W3	4'-0"x 4'-6"	Glazed Window [2 Sash]	04	4 Nos.2"x 4"hinges, 2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring

INDIA
India-Sri Lanka Friendship

TYPE PLAN – IV: DETAILS OF DOORS & WINDOWS

DESIGNED BY:-
UN HABITAT

INDIAN HOUSING PROJECT

SCALE:-
NOT TOSCALE

DRAWING No:-
UNH/IHP/TP IV/007

Bill of Quantities for Lockable House -Type: IV

Approximate Plinth area -567 sq.ft

Implemented by : UN Habitat

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	13.2	500.00	6,600.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.6	9,000.00	14,400.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	12.6	7,500.00	94,500.00
4	Applying DPC on top of foundation with Bitumen	m	47.0	100.00	4,700.00
5	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	102.8	1,200.00	123,360.00
6	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	71.4	1,000.00	71,400.00
7	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	39.9	750.00	29,925.00
8	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	79.6	1,900.00	151,240.00
9	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	12.2	225.00	2,745.00
10	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
11	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	47.3	650.00	30,745.00
12	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	123.8	350.00	43,330.00
13	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	35.3	128.00	4,518.79
14	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	19.3	380.00	7,334.00

15	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00
16	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	5.0	7,000.00	35,000.00
17	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
18	Toilet door	No	1.0	4,000.00	4,000.00
19	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
Sub-total for lockable house including unskilled labour			**Rs**		**666,696.00**
	Electrical and Plumbing (Optional)				
20	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
21	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
22	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,746.00
23	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
24	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
25	Supply and install Tap	No	1.0	405.00	405.00
Sub-total for plumbing and electricity			**Rs**		**17,781.00**
Grand total for lockable house including plumbing and electricity			**Rs**		**684,477.00**

Note:

Lockable house including

1 Internal plastering and rendering for one room , living room and Kitchen
2 External face finished with neat pointing
3 External front doors and windows fixing
4 Cubical (1x1.2x1.8m) with septic tank and soakage pit (1.5x1x1.5m)
5 Electrical and Plumbing (Optional)

Prepared: 28.08.2012
Revised 02.01.2013

Bill of Quantities for Lockable House -Type: IV

Approximate Plinth area -567 sq.ft

Construction Milestone -I (Foundation)

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	13.2	500.00	6,600.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.6	9,000.00	14,400.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	12.6	7,500.00	94,500.00
4	Applying DPC on top of foundation with Bitumen	m	47.0	100.00	4,700.00
	Sub-Total				**120,200.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	29.6	940.00	27,834.60
2	Sand	Cu.m	4.7	1,750.00	8,193.50
3	Aggregate (38mm)	Cu.m	1.5	3,500.00	5,144.90
4	Rubble	Cu.m	16.4	1,700.00	27,846.00
5	Bitumen/Tar	lit	8.7	130.00	1,153.90
	Materails- Sub Total				**70,172.80**
6	Mason	Day	20.0	1,000.00	19,922.00
7	Labor	Day	38.0	800.00	30,106.60
	Labor- Sub Total				**50,028.60**
	Total				**120,200.00**

Bill of Quantities for Lockable House -Type: IV

Approximate Plinth area -567 sq.ft

Construction Milestone -II (Wall/Superstructure)

No	Description	Unit	Qty	Rate	Amount
1	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	102.8	1,200.00	123,360.00
2	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	71.4	1,000.00	71,400.00
3	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	39.9	750.00	29,925.00
4	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	12.2	225.00	2,745.00
5	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	47.3	650.00	30,745.00
	Sub-Total				**258,175.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	30.1	940.00	28,340.50
2	Sand	Cu.m	4.7	1,750.00	8,227.10
3	Aggregate (20mm)	Cu.m	4.0	3,600.00	14,558.80
4	150mm Cement Block	No	1936.5	46.00	89,078.60
5	100mm Cement Block	No	1345.0	36.00	48,419.80
6	Re-bars 10mm	Bar	13.1	410.00	5,360.70
7	Binding wire	Kg	3.1	150.00	465.00

8	Formwork	Sq.m	17.0	50.00	850.30
9	Nails	Kg	4.4	150.00	641.60
	Materails- Sub Total				**195,942.30**
10	Mason	Day	21.0	1,000.00	20,690.10
11	Carpenter	Day	2.0	1,000.00	2,270.50
12	Labor	Day	49.0	800.00	39,273.60
	Labor- Sub Total				**62,234.20**
Total					**258,175.00**

Bill of Quantities for Lockable House -Type: IV

Approximate Plinth area -567 sq.ft

Construction Milestone -III (Roof and Finishing)

No	Description	Unit	Qty	Rate	Amount
1	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	79.6	1,900.00	151,240.00
2	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
3	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	123.8	350.00	43,330.00
4	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	35.3	128.00	4,518.79
5	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	19.3	380.00	7,334.00

6	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00
7	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	5.0	7,000.00	35,000.00
8	Toilet door	No	1.0	4,000.00	4,000.00
9	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
10	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
	Sub-Total				**288,321.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	100x75mm-wall plate 4.65m	Nos	4.0	1,800.00	7,200.00
2	125x100mm- 4.65m Purlin	Nos	4.0	2,000.00	8,000.00
3	150x100mm-3.65m Tie beam	Nos	1.0	3,100.00	3,100.00
4	125x75mm- 0.9m Strut	Nos	1.0	450.00	450.00
5	175x50mm-3.65m Ridge Plate	Nos	2.0	2,100.00	4,200.00
6	50x25mm Reeper	m	350.0	30.00	10,500.00
7	100x50mm-2.7m -Rafter	Nos	36.0	625.00	22,500.00
8	100x50mm-2.1m -Rafter	Nos	36.0	500.00	18,000.00
9	Nails and binding wire	Kg	11.5	150.00	1,725.00
10	Flat Tiles	Nos	1250.0	35.00	43,750.00
11	Ridge Tiles	Nos	34.0	62.00	2,108.00
12	Wood Preservative	Gal	4.2	200.00	840.00
13	Cement	No	28.8	940.00	27,026.70
14	Sand	Cu.m	5.7	1,750.00	10,012.30
15	Aggregate (20mm)	Cu.m	0.8	3,600.00	2,736.00

16	Lime	Bushels	2.1	200.00	428.40
17	Re-bars 10mm	Bar	10.3	410.00	4,237.70
18	Nails	Kg	7.5	150.00	1,146.50
19	Door (3'-6"x6'-6") with frames in Class I timber	No	2.0	9000.00	18,000.00
20	Window (4'-0"x3'-6") with frames in Calss I timber	No	5.0	7000.00	35,000.00
21	Toilet door	No	1.0	4000.00	4,000.00
22	4" dia PVC pipe	m	2.5	100.00	250.00
23	4" dia PVC T	No	1.0	300.00	300.00
24	Squatting pan with footrest	No	1.0	1500.00	1,500.00
	Materails- Sub Total				**227,010.50**
25	Mason	Day	17.0	1,000.00	17,402.70
26	Capenter	Day	10.0	1,000.0 0	9,566.10
27	Labor	Day	43.0	800.00	34,342.10
	Labor- Sub Total				**61,310.90**
	Total				**288,321.00**

Bill of Quantities for Lockable House -Type:IV

Approximate Plinth area -567 sq.ft

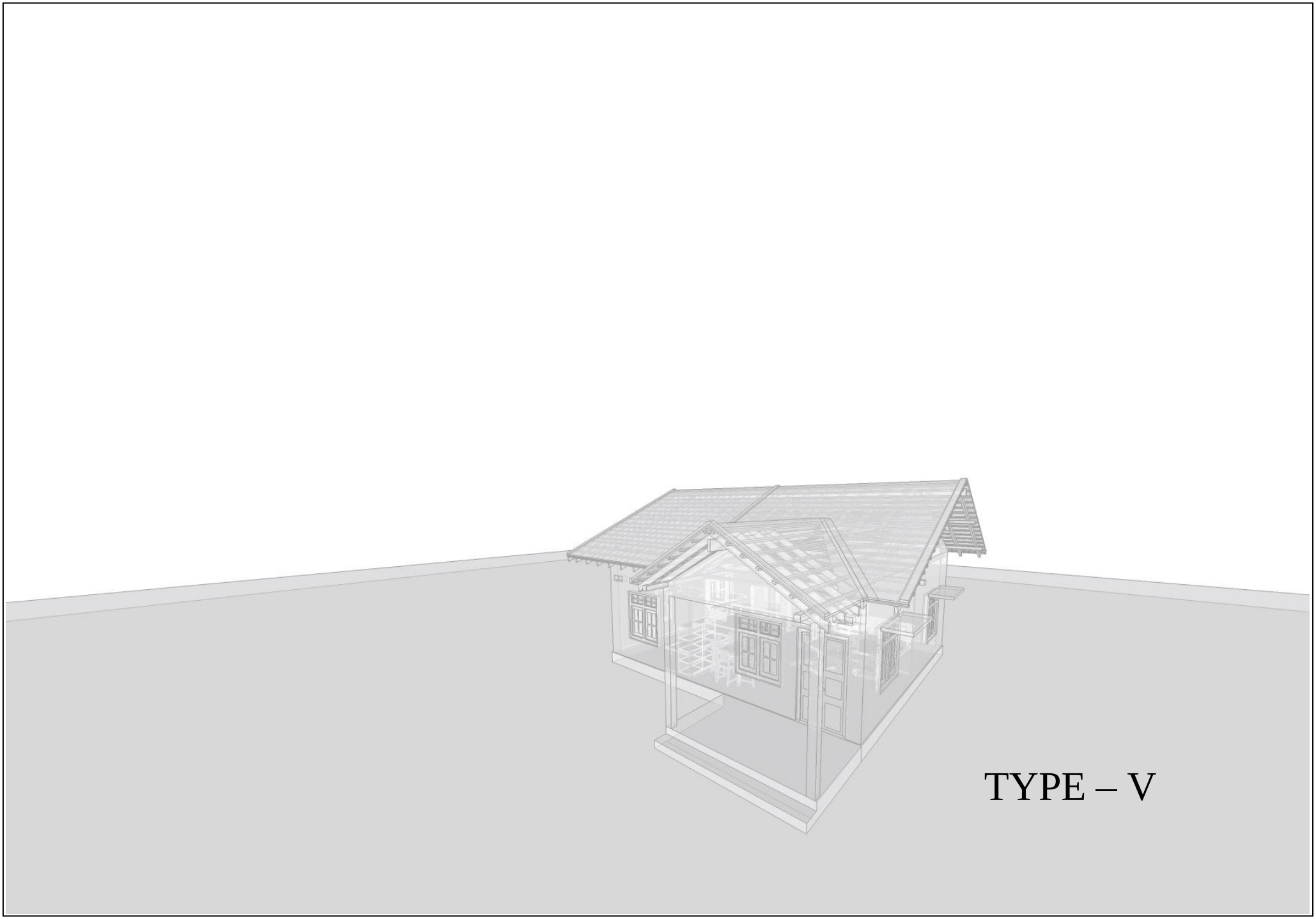
Plumbing and Electricity Supply- Optional

No	Description	Unit	Qty	Rate	Amount
1	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
2	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
3	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,746.00
4	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
5	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
6	Supply and install Tap	No	1.0	405.00	405.00
	Sub-Total				**17,781.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	7/.044 wire	m	5.0	100.00	500.00
2	Conduit pipe	m	18.0	35.00	630.00
3	Brass Screws 2"x10	No	2.0	3.00	6.00
4	Brass Screws 1 1/4"x6	No	2.0	5.00	10.00
5	ABC box 500 type	No	1.0	550.00	550.00
6	Board 10"x10"	No	1.0	140.00	140.00
7	Sun box	No	8.0	20.00	160.00
8	Nails and binding wire	Kg	1.0	150.00	150.00
9	500 L water tank	No	1.0	7,000.00	7000.00

10	32 mm Tired socket	No	1.0	125.00	125.00
11	32mm for socket	No	1.0	125.00	125.00
12	32 to 25 mm R/ socket	No	1.0	130.00	130.00
13	25mm L bow	No	2.0	45.00	90.0
14	25 mm Boll valve	No	1.0	450.00	450
15	25 mmTread socket	No	2.0	45.00	90
16	200 g Solvent cement	No	1.0	300.00	300
17	25mm End cap	No	1.0	41.00	42.0
18	25 mm pipe (type 1000)	m	10.0	90.00	900
19	25 to 12mm redusing T	No	1.0	135.00	135
20	12mm bip tap	No	1.0	250.00	250.0
	Materails- Sub Total				**11,783.0**
21	Electrician	Day	2.0	1,000.00	2,000.0
22	Plumber	Day	2.0	1,000.00	2,000.0
23	Labor	Day	2.5	800.00	2,000.0
	Labor- Sub Total				**6,000.0**
	Total				**17,781.00**



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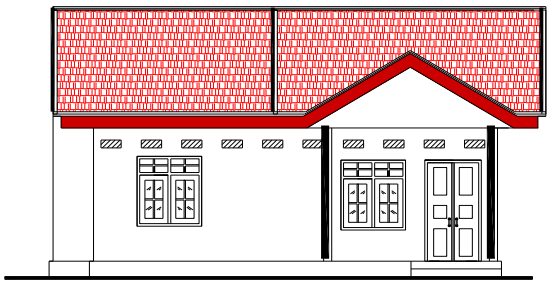
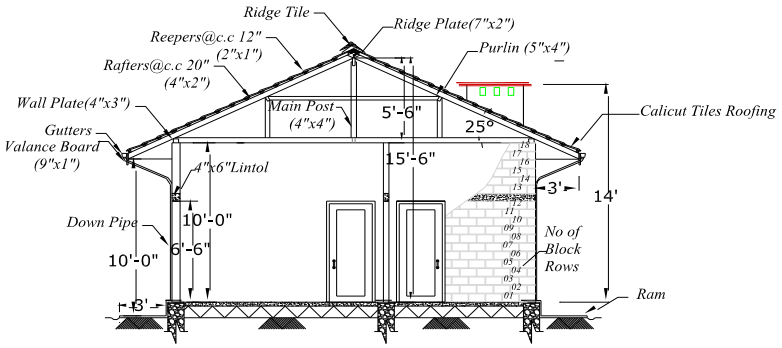
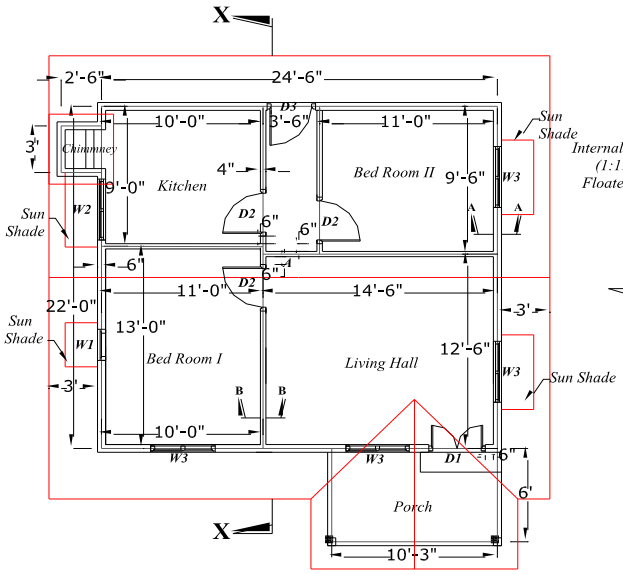


FRONT ELEVATION



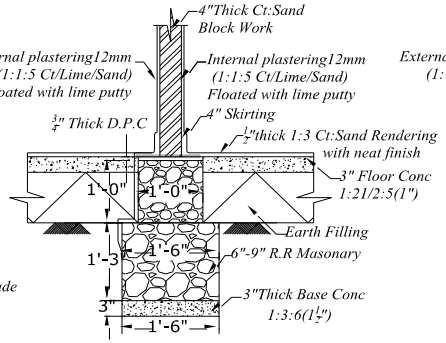
SECTION X-X

SCHEDULE OF DOORS & WINDOWS					Fixtures details [for a one item] [Heavy quality brass fitting]
S.No	Item	Size [External]	Description	Nos.	
01	D1	3'-6"x 6-'6"	Timber Panelled Door [2 Sash]	01	6 Nos.4"x 4"hinges, 1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4" barrel bolt
02	D2	3'-0"x 6-'6"	Timber Panelled Door	03	3 Nos. 2"x 4" hinges, 1 Nos. door handle 1 Nos. 2" barrel bolt[Note:1 Nos.lock for lockable room]
03	D3	2'-6"x 6'-6"	Braced & Batten Door	01	3 Nos. 2"x 4" tee hinges, 1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2" barrel bolt
04	W1	2'-0"x 4'-6"	Glazed Window	01	2 Nos.2"x 4"hinges, 1 Nos. casement lock, 1 Nos. casement stay, 1 Nos. pull ring
05	W2	4'-0"x 3'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring
06	W3	4'-0"x 4'-6"	Glazed Window [2 Sash]	04	4 Nos.2"x 4"hinges, 2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring
07	A	2'-6"x 6'-6"	Arch	01	



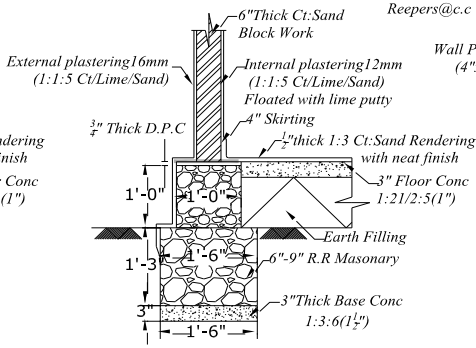
GROUND FLOOR PLAN

Scale :- 8'- 0" to an Inch



DETAILS OF INTERNAL WALL FOUNDATION SECTION B-B

Scale :- 2'- 0" to an Inch

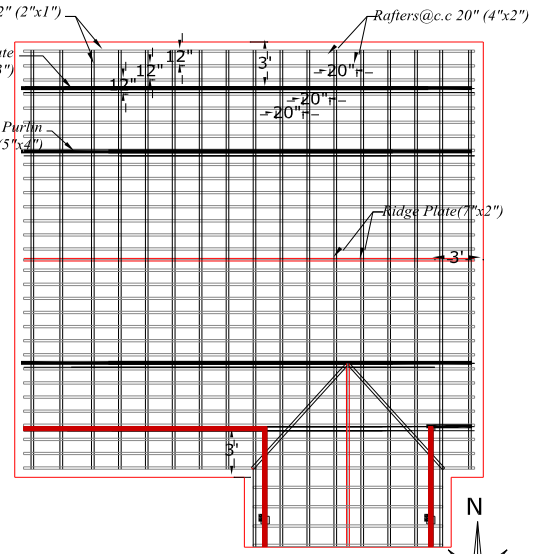


DETAILS OF EXTERNAL WALL FOUNDATION SECTION A-A

Scale :- 2'- 0" to an Inch

Note:-

This is a plan for guidance of the beneficiaries. The dimensions may be changed to suit beneficiary requirements without reducing the total floor area. Also materials for the construction indicated here may also be changed based on the technical specifications provided separately.



GABLE ROOF DETAILS

Scale :- 8'- 0" to an Inch

INDIA
India-Sri Lanka Friendship
सत्यमेव जयते

TYPE PLAN – V: PROPOSED HOUSE PLAN

INDIAN HOUSING PROJECT

PLINTH AREA:-
574 sq.ft

DESIGNED BY:-
UN HABITAT

DRAWING No:-
UNH/IHP/TP V/R001

INDIA India-Sri Lanka Friendship	TYPE PLAN – V: FRONT VIEW	DESIGNED BY:- UN HABITAT
सत्यमेव जयते	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP V/002

INDIA
India-Sri Lanka Friendship
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இந்திய-இலங்கை நட்புறவு
सत्यमेव जयते

TYPE PLAN – V: FRONT VIEW WITHOUT EXTERNAL PLASTER

INDIAN HOUSING PROJECT

DESIGNED BY:-
UN HABITAT

DRAWING No:-
UNH/IHP/TP V/003

INDIA
India-Sri Lanka Friendship
ඉන්දු-ශ්‍රී ලංකා මිත්‍රත්වය
இந்திய-இலங்கை நட்புறவு
सत्यमेव जयते

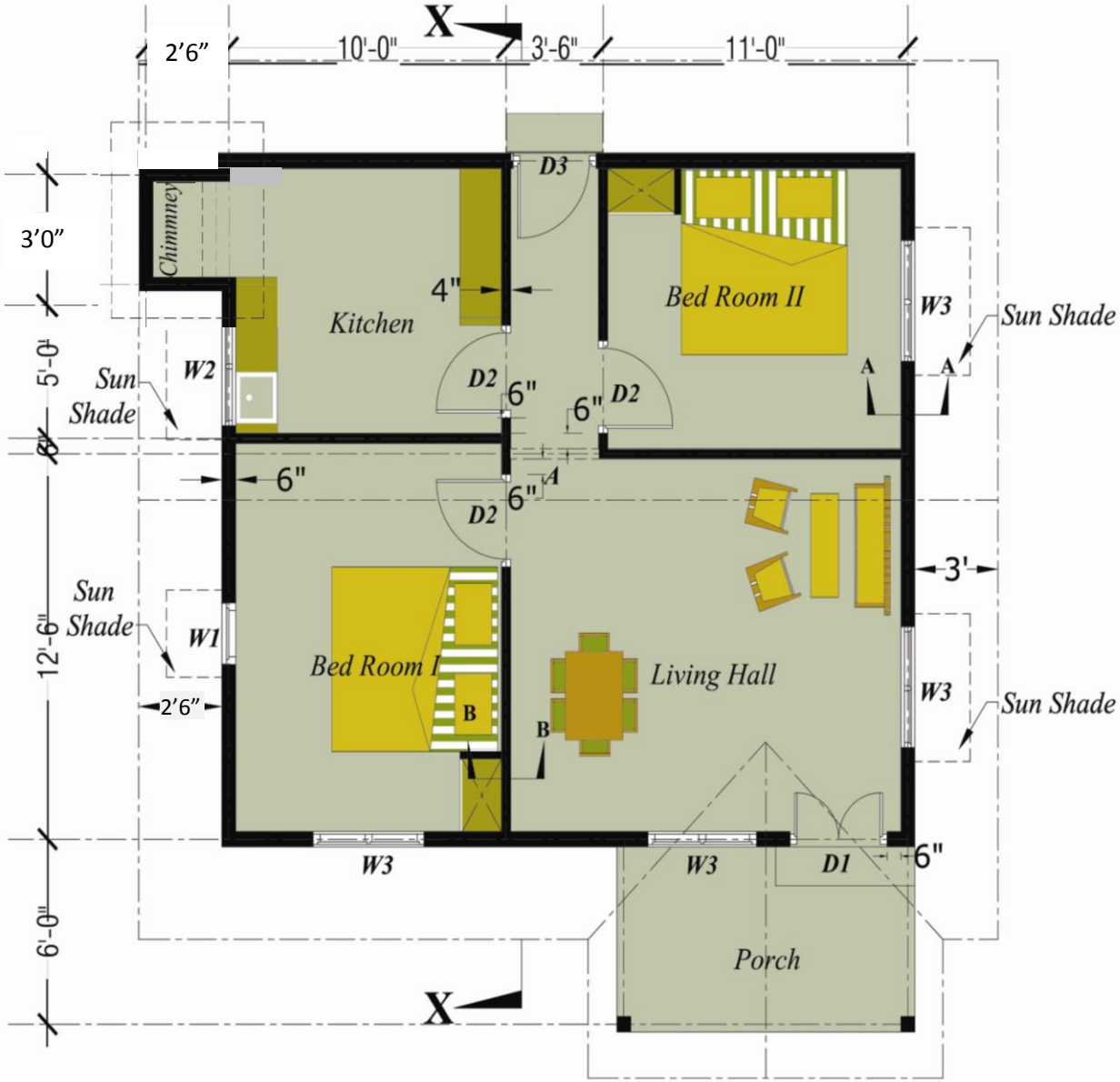
TYPE PLAN – V: REAR VIEW

INDIAN HOUSING PROJECT

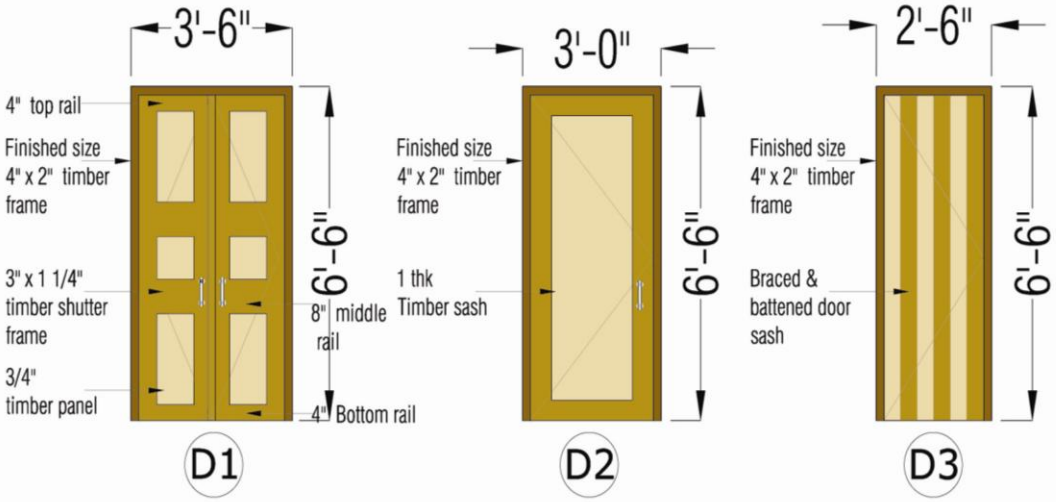
DESIGNED BY:-
UN HABITAT

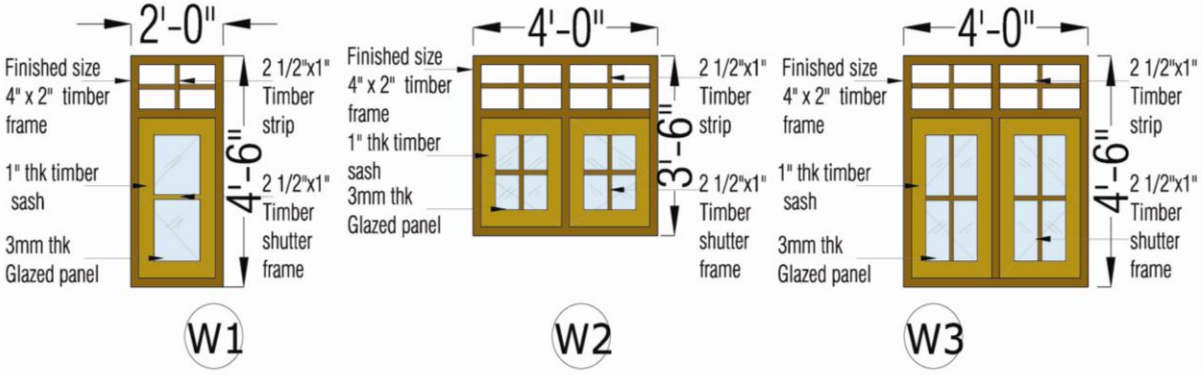
DRAWING No:-
UNH/IHP/TP V/004

INDIA India-Sri Lanka Friendship	TYPE PLAN – V: INTERNEL ARRANGMENT OF ROOMS	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP V/005



	TYPE PLAN – V: PLAN VIEW		DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	SCALE:- 4'- 0" = 1'0"	DRAWING No:- UNH/IHP/TP V/R006





SCHEDULE OF DOORS & WINDOWS					Fixtures details [for a one item] [Heavy quality brass fitting]
S.No	Item	Size [External]	Description	Nos.	
01	D1	3'-6"x 6-'6"	Timber Panelled Door [2 Sash]	01	6 Nos.4"x 4"hinges, 1 Nos. main door lock, 2 Nos. door handle, 2 Nos. 4" barrel bolt
02	D2	3'-0"x 6-'6"	Timber Panelled Door	03	3 Nos. 2"x 4" hinges, 1 Nos. door handle 1 Nos. 2" barrel bolt[Note:1 Nos.lock for lockable room]
03	D3	2'-6"x 6'-6"	Braced & Batten Door	01	3 Nos. 2"x 4" tee hinges, 1 Nos. door lock, 1 Nos. door handle, 2 Nos. 2" barrel bolt
04	W1	2'-0"x 4'-6"	Glazed Window	01	2 Nos.2"x 4"hinges, 1 Nos. casement lock, 1 Nos. casement stay, 1 Nos. pull ring
05	W2	4'-0"x 3'-6"	Glazed Window [2 Sash]	01	4 Nos.2"x 4"hinges, 2Nos. casement lock, 2 Nos. casement stay, 2 Nos. pull ring
06	W3	4'-0"x 4'-6"	Glazed Window [2 Sash]	04	4 Nos.2"x 4"hinges, 2 Nos. casement lock, 2 Nos. casement stay, 2Nos. pull ring

INDIA
India-Sri Lanka Friendship

TYPE PLAN – V: DETAILS OF DOORS & WINDOWS

DESIGNED BY:-
UN HABITAT

INDIAN HOUSING PROJECT

SCALE:-
NOT TOSCALE

DRAWING No:-
UNH/IHP/TP V/007

Bill of Quantities for Lockable House -Type: V

Approximate Plinth area -574 sq.ft

Implemented by : UN Habitat

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	15.1	500.00	7,550.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.9	9,000.00	17,100.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	14.9	7,500.00	111,750.00
4	Applying DPC on top of foundation with Bitumen	m	55.8	100.00	5,580.00
5	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	97.3	1,200.00	116,760.00
6	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	54.4	1,000.00	54,400.00
7	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	35.8	750.00	26,850.00
8	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	82.6	1,900.00	156,940.00
9	22BWG 900mm wide Valley Gutter made out of GI sheet	m	5.45	500.00	2,727.27
10	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	9.7	225.00	2,182.50
11	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
12	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	41.6	650.00	27,040.00
13	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	121.2	350.00	42,420.00
14	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	26.82	128.00	3,432.73
15	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	21.4	380.00	8,132.00

16	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00
17	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	5.0	7,000.00	35,000.00
18	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
19	Toilet door	No	1.0	4,000.00	4,000.00
20	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
21	Construction of 150mm dia size RC concrete columns with 75mm thick 600x600x150mm 1:2:4(20) concrete Footing, plastering . Rate to include 600mm deep excavation,10mm tor @ 150mm centres both ways in footing, 3 No. 10mm tor and 6mm stirrups at 200mm centres in column and shuttering. Column above ground level 3m all as per type plan.	No	2.0	5,368.00	10,736.00
Sub-total for lockable house including unskilled labour			**Rs**		**675,499.00**
	Electrical and Plumbing (Optional)				
22	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
23	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
24	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,746.00
25	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
26	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
27	Supply and install Tap	No	1.0	405.00	405.00
Sub-total for plumbing and electricity			**Rs**		**17,780.00**
Grand total for lockable house including plumbing and electricity			**Rs**		**693,279.00**

Note:

Lockable house including

1 Internal plastering and rendering for one room , living room and Kitchen
2 External face finished with neat pointing
3 External front doors and windows fixing
4 Cubical (1x1.2x1.8m) with septic tank and soakage pit (1.5x1x1.5m)
5 Electrical and Plumbing (Optional)

Prepared: **28.08.2012**
Revised : **02.01.2013**

Bill of Quantities for Lockable House -Type: V

Approximate Plinth area -574 sq.ft

Construction Milestone -I (Foundation)

No	Description	Unit	Qty	Rate	Amount
1	Excavation in trenches for foundation and septic tank and depositing excavated material to a distance not exceeding 2.0m.	Cu.m	15.1	500.00	7,550.00
2	75mm thick 1:3:6(38mm) cement concrete screed in foundation.	Cu.m	1.9	9,000.00	17,100.00
3	Random rubble masonry in 1:5 cement mortar in foundation.	Cu.m	14.9	7,500.00	111,750.00
4	Applying DPC on top of foundation with Bitumen	m	55.8	100.00	5,580.00
	Sub-Total				**141,980.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	35.1	940.00	32,949.80
2	Sand	Cu.m	5.5	1,750.00	9,696.90
3	Aggregate (38mm)	Cu.m	1.7	3,500.00	6,109.50
4	Rubble	Cu.m	19.4	1,700.00	32,929.00
5	Bitumen/Tar	lit	10.3	130.00	1,353.80
	Materails- Sub Total				**83,039.10**
6	Mason	Day	24	1,000.00	23,568.50
7	Labor	Day	44	800.00	35,373.80
	Labor- Sub Total				**58,942.30**
	Total				**141,980.00**

Bill of Quantities for Lockable House -Type: V

Approximate Plinth area -574 sq.ft

Construction Milestone -II (Wall/Superstructure)

No	Description	Unit	Qty	Rate	Amount
1	150mm thick Block masonry wall in 1:5 Cement mortar for external wall, external face finished with neat pointing	Sq.m	97.3	1,200.00	116,760.00
2	100mm thick Block masonry wall in 1:5 Cement mortar for partitions wall, cubical and septic tank	Sq.m	54.4	1,000.00	54,400.00
3	Lintel Beam 100mm x 150mm, cement concrete1:2:4(20), Reinforcement with 2 No. 10mm tor steel including form work.	m	35.8	750.00	26,850.00
4	Earthwork - Back filling & compacting. (Back filling to trenches with selected earth available at site)	Cu.m	9.7	225.00	2,182.50
5	60 mm thick 1:2 1/2:5(25mm) cement concrete in floor	Sq.m	41.6	650.00	27,040.00
6	Construction of 150mm dia size RC concrete columns with 75mm thick 600x600x150mm 1:2:4(20) concrete Footing, plastering . Rate to include 600mm deep excavation,10mm tor @ 150mm centres both ways in footing, 3 No. 10mm tor and 6mm stirrups at 200mm centres in column and shuttering. Column above ground level 3m all as per type plan.	No	2.0	5,368.00	10,736.00
	Sub-Total				**237,969.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	Cement	No	26.5	940.00	24,949.30
2	Sand	Cu.m	4.2	1,750.00	7,284.30
3	Aggregate (20mm)	Cu.m	3.6	3,600.00	12,854.50
4	150mm Cement Block	No	1832.9	46.00	84,312.70
5	100mm Cement Block	No	1024.8	36.00	36,891.30
6	Re-bars 10mm	Bar	24.7	410.00	10,139.90
7	Binding wire	Kg	4.0	150.00	600.00
8	Formwork	Sq.m	16.9	50.00	851.00
9	Nails	Kg	5.9	150.00	907.20
	Materails- Sub Total				**178,790.10**
10	Mason	Day	21.0	1,000.00	20,851.50
11	Carpenter	Day	6.0	1,000.00	5,934.40
12	Labor	Day	40.0	800.00	32,395.10
	Labor- Sub Total				**59,181.10**
	Total				**237,969.00**

Bill of Quantities for Lockable House -Type: V

Approximate Plinth area -574 sq.ft

Construction Milestone -III (Roof and Finishing)

No	Description	Unit	Qty	Rate	Amount
1	Roof, Gable with Calicut pattern tiles on 150x50 ridge plates, 125x75 purling, 100x75 wall plates, 100x50 rafter at 550mm centers and 50x25 mm reaper at 300 mm centers in acceptable quality timber frame work including ridging and application of two coats wood preservative.	Sq.m	82.6	1,900.00	156,940.00
2	22BWG 900mm wide Valley Gutter made out of GI sheet	m	5.45	500.00	2,727.27
3	Provision for cyclone resistance including stiffener columns and roof band & ridge construction	Item	1.0	9,898.00	9,898.00
4	12mm thick 1:5 cement internal plastering & finished smooth for one bed room, living room and kitchen at 3.05 m height and septic tank at 1 m height (Prior to plastering provide electrical conduit pipe for future use)	Sq.m	121.2	350.00	42,420.00
5	External decorative plaster band (Architrave) around door and window - reveals extending to the external wall surface to form a band of 4" wide	m	26.82	128.00	3,432.73
6	12mm thick 1:3 cement sand mix rendering in a room and kitchen	Sq.m	21.4	380.00	8,132.00
7	Doors- supplying and fixing of 28mm thick sash and with 100mm x 50mm frames with acceptable quality timber with iron mongary & lock	No	2.0	9,000.00	18,000.00
8	Window- supplying and fixing 25mm thick sash and with 100mm x 50 mm frames with acceptable quality timber with iron mongary	No	5.0	7,000.00	35,000.00
9	Toilet door	No	1.0	4,000.00	4,000.00
10	Supplying and fixing squatting pan . Rate including plumbing	Item	1.0	6,000.00	6,000.00
11	75mm thick 1:2:4 concrete for slab including R/F 10mm B/W at 200mm spacing including formwork in chimney and toilet slab	Sq.m	5.0	1,800.00	9,000.00
	Sub-Total				**295,550.00**

Materials and Labor Breakdown

No	Items	Unit	Qty	Rate	Amount
1	100x75mm-wall plate 4.65m	Nos	4.0	1,800.00	7,200.00
2	125x100mm- 4.65m Purlin	Nos	4.0	2,000.00	8,000.00
3	150x100mm-3.65m Tie beam	Nos	1.0	3,100.00	3,100.00
4	125x75mm- 0.9m Strut	Nos	1.0	450.00	450.00
5	175x50mm-3.65m Ridge Plate	Nos	3.0	2,100.00	6,300.00
6	50x25mm Reeper	m	340.0	30.00	10,200.00
7	100x50mm-2.7m -Rafter	Nos	36.0	625.00	22,500.00
8	100x50mm-2.1m -Rafter	Nos	36.0	500.00	18,000.00
9	Nails and binding wire	Kg	10.0	150.00	1,500.00
10	Flat Tiles	Nos	1290.0	35.00	45,150.00
11	Ridge Tiles	Nos	40.0	62.00	2,480.00
12	Wood Preservative	Gal	4.0	200.00	800.00
13	22BWG 900mm wide Valley Gutter made out of GI sheet	m	82.6	500.00	2,727.27
14	Cement	No	28.9	940.00	27,184.50
15	Sand	Cu.m	5.7	1,750.00	9,943.20
16	Aggregate (20mm)	Cu.m	0.8	3,600.00	2,736.00
17	Lime	Bushels	2.2	200.00	444.50
18	Re-bars 10mm	Bar	10.3	410.00	4,237.70
19	Nails	Kg	7.4	150.00	1,114.10
20	Door (3'-6"x6'-6") with frames in Class I timber	No	2.0	9000.00	18,000.00
21	Window (4'-0"x3'-6") with frames in Calss I timber	No	5.0	7000.00	35,000.00
22	Toilet door	No	1.0	4000.00	4,000.00
23	4" dia PVC pipe	m	2.5	100.00	250.00
24	4" dia PVC T	No	1.0	300.00	300.00

25	Squatting pan with footrest	No	1.0	1500.00	1,500.00
	Materails- Sub Total				**233,117.30**
26	Mason	Day	17.0	1,000.00	17,262.40
27	Capenter	Day	10.0	1,000.00	10,077.40
28	Labor	Day	44.0	800.00	35,092.60
	Labor- Sub Total				**62,432.30**
	Total				**295,550.00**

Bill of Quantities for Lockable House -Type: V

Approximate Plinth area -574 sq.ft

Plumbing and Electricity Supply- Optional

No	Description	Unit	Qty	Rate	Amount
1	Installation of Distribution Box (ABC box) with plastic enclosure.	No	1.0	1,656.00	1,656.00
2	Fixing Sunk Box for switches and plug in masonry wall.	No	8.0	83.00	664.00
3	Fixing conduit pipe from ABC box to light points and Plugs. Rate includes chipping wall for embedding the pipe in masonry wall.	M	18.0	97.00	1,745.00
4	Supplying and fixing 500 l water tank on top of toilet slab. Rate include all necessary fittings	No	1.0	7,450.00	7,450.00
5	Supply and install 20 mm uPVCI Dia pipe (1000) distribution from water tank to Tap point. Rate include all necessary fittings	M	10.0	586.00	5,860.00
6	Supply and install Tap	No	1.0	405.00	405.00
	Sub-Total				**17,780.00**

Materials and Labor Breakdown

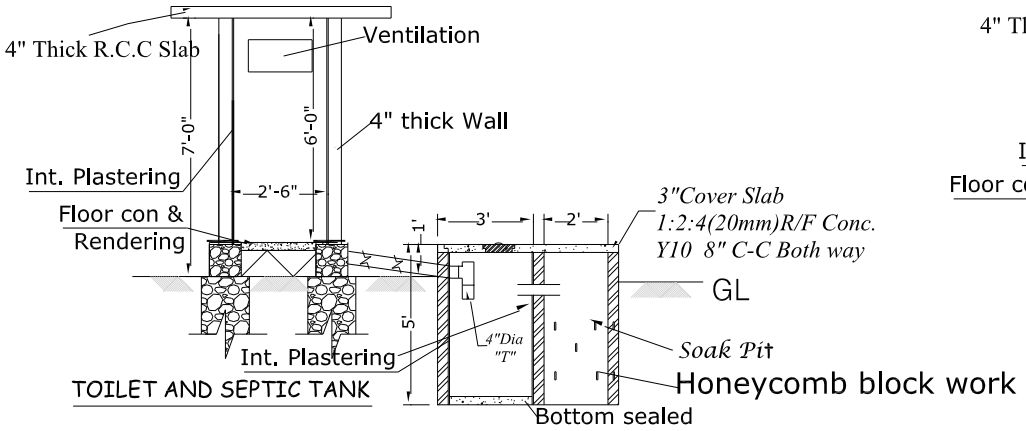
No	Items	Unit	Qty	Rate	Amount
1	7/.044 wire	m	5.0	100.00	500.00
2	Conduit pipe	m	18.0	35.00	630.00
3	Brass Screws 2"x10	No	2.0	3.00	6.00
4	Brass Screws 1 1/4"x6	No	2.0	5.00	10.00
5	ABC box 500 type	No	1.0	550.00	550.00
6	Board 10"x10"	No	1.0	140.00	140.00
7	Sun box	No	8.0	20.00	160.00
8	Nails and binding wire	Kg	1.0	150.00	150.00
9	500 L water tank	No	1.0	7,000.00	7000.00
10	32 mm Tired socket	No	1.0	125.00	125.00
11	32mm for socket	No	1.0	125.00	125.00
12	32 to 25 mm R/ socket	No	1.0	130.00	130.00
13	25mm L bow	No	2.0	45.00	90.00
14	25 mm Boll valve	No	1.0	450.00	450.00
15	25 mmTread socket	No	2.0	45.00	90.00
16	200 g Solvent cement	No	1.0	300.00	300.00
17	25mm End cap	No	1.0	41.00	41.00
18	25 mm pipe (type 1000)	m	10.0	90.00	900.00
19	25 to 12mm redusing T	No	1.0	135.00	135.00
20	12mm bip tap	No	1.0	250.00	250.00
	Materails- Sub Total				**11,782.00**
21	Electrician	Day	2.0	1,000.00	2,000.00
22	Plumber	Day	2.0	1,000.00	2,000.00
23	Labor	Day	2.5	800.00	2,000.00
	Labor- Sub Total				**6,000.00**
Total					**17,780.00**

TOILET WITH SEPTIC TANK

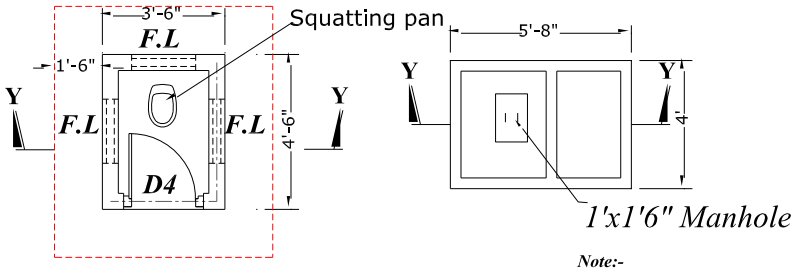
TOILET WITH CESSPIT
(land of extent more than 40 perches)

INDIA India-Sri Lanka Friendship	TYPES OF TOILET	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP T/001

TOILET WITH SEPTIC TANK

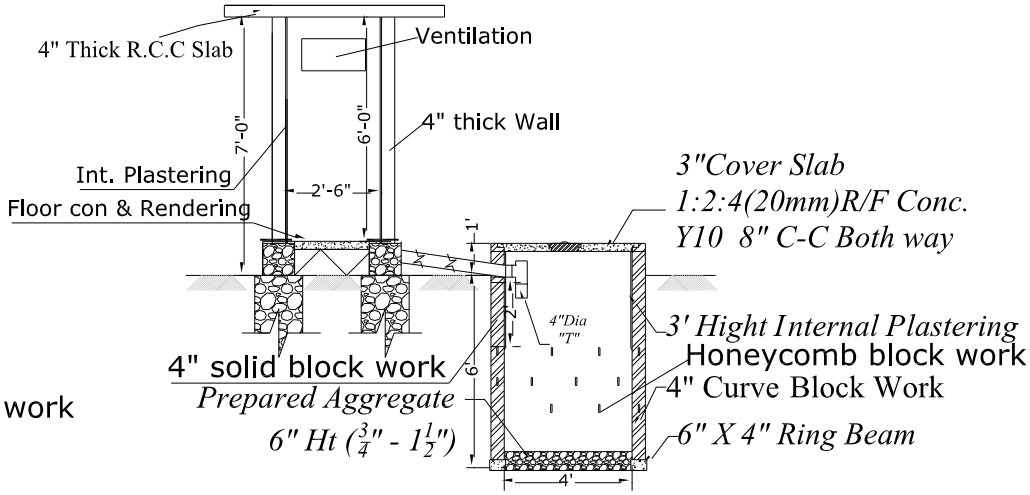


SECTION Y-Y

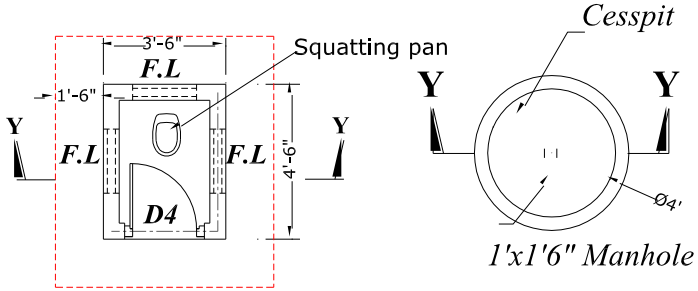


Scale: 8 ft to an Inch

TOILET WITH CESSPIT
(Land of extent more than 40perches)



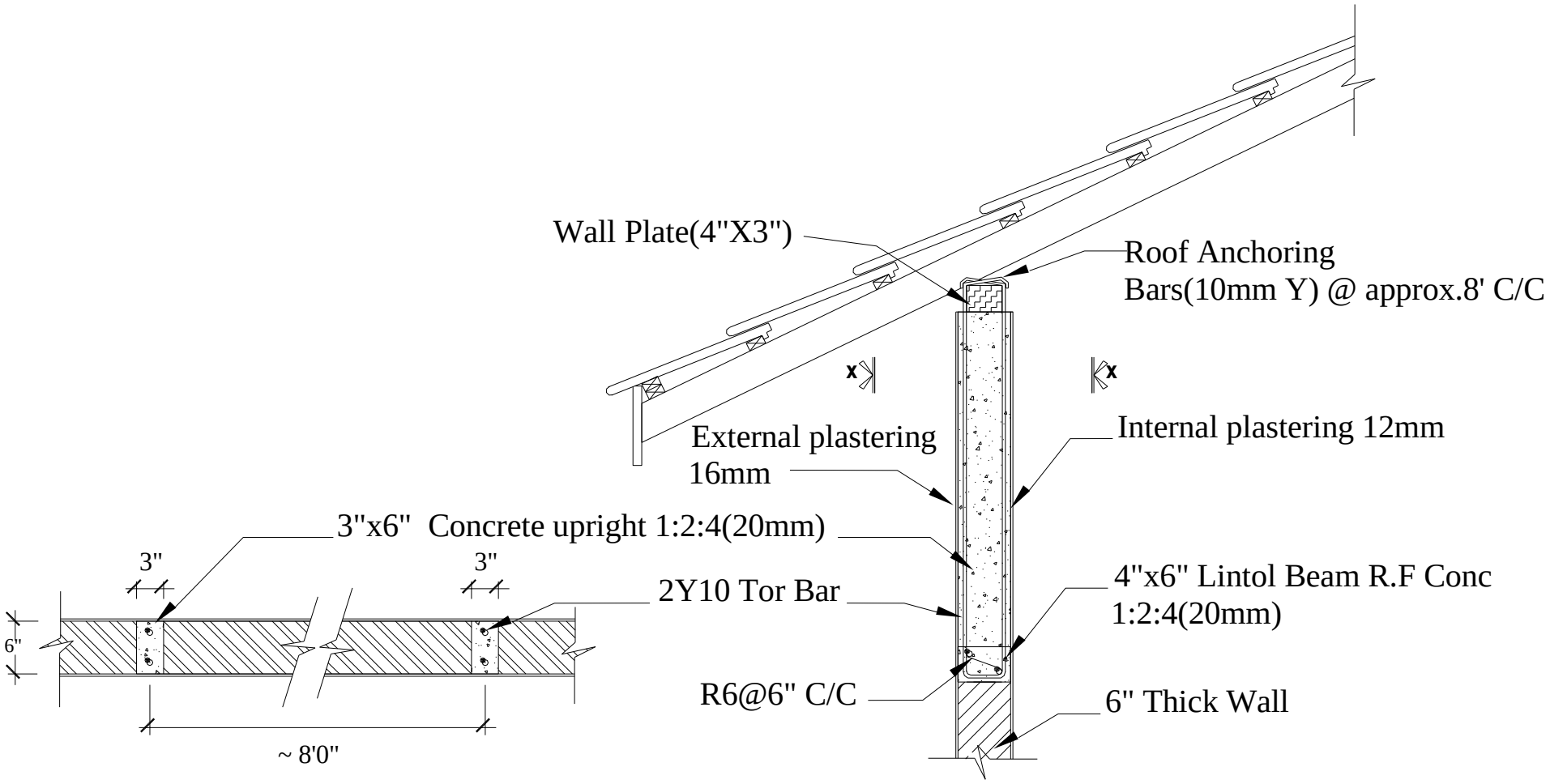
SECTION Y-Y



Scale: 8 ft to an Inch

Note:-
This is a planfor guidance of the beneficiaries. The dimensions may be changed to suit beneficiary requirements without reducing the total floor area. Also materialsfor the construction indicated here may also be changed based on the technical specifications provided separately.

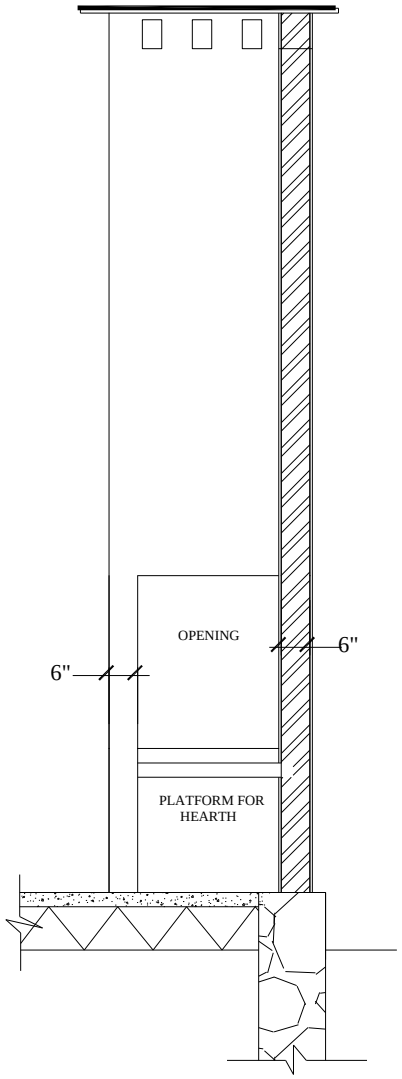
INDIA India-Sri Lanka Friendship	DETAILS OF TYPE TOILETS	DESIGNED BY:- UN HABITAT
	INDIAN HOUSING PROJECT	DRAWING No:- UNH/IHP/TP T/002



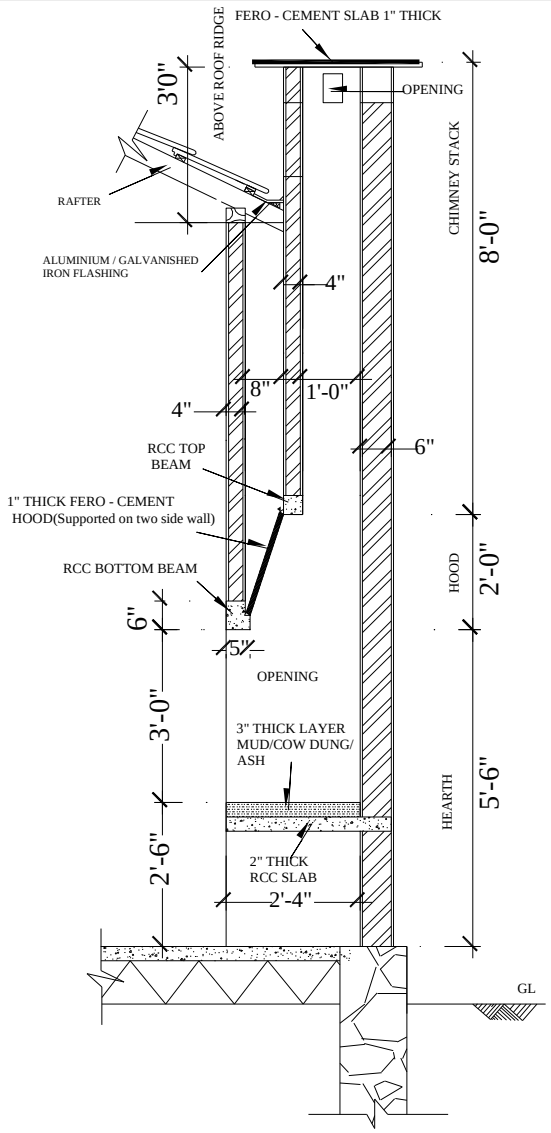
SECTION XX

Note : Roof Anchoring bars to be provided around the wall plate at approximate intervals of 8ft.

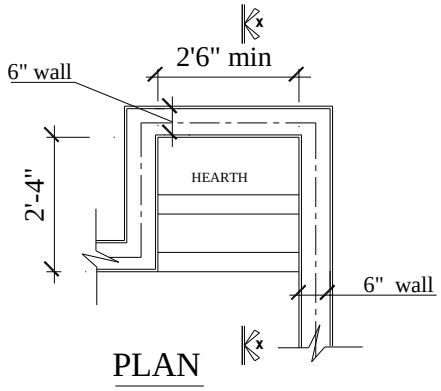
	FIXING DETAIL OF ROOF ANCHORING	DESIGNED BY:- UN HABITAT
INDIA India-Sri Lanka Friendship	INDIAN HOUSING PROJECT	SCALE:- 2'0" TO AN INCH
सत्यमेव जयते		DRAWING No:- UNH/IHP/DP /001



ELEVATION



SECTION XX



PLAN

Notes:

Technical Features

- **Platform for the hearth**
  - 2″ thick RCC slab supported on three sides by walls
  - Clear dimensions:
    Width: 2'6″, depth: 2'3″, height from finished floor: 2'6″
  - 3″ thick layer of mud/cow dung/ash on slab
- **Hood structure**
  - 5″x 6″ RCC bottom beam across width of hearth
  - Height of bottom beam soffit from finished floor level : 5'6″
  - 1″ thick Ferro-cement hood sloped toward rear wall
  - 4″x4″ RCC top beam to support chimney stack wall
- **Chimney structure**
  - 4 ½″ brick or 4″ block wall on front wall of chimney stack
  - Clear dimensions of chimney stack:
    Width: 2'6″(internal)
    Depth: 1'0″ (internal)
  - Top of chimney stack raised 3'0″ above ridge level
  - 1″ thick Ferro-cement slab on top of chimney stack
  - Suitable sized openings under top slab, placed as per wind directions
- **AL / GI IRON FLASHING**
  - 18 b.w.g (1.2mm) Aluminium or galvanised iron flashing
    1'6" grith oveall 3 times bent with end laps not less than 6".

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COST EFFECTIVE SMOKE – FREE CHIMNEY

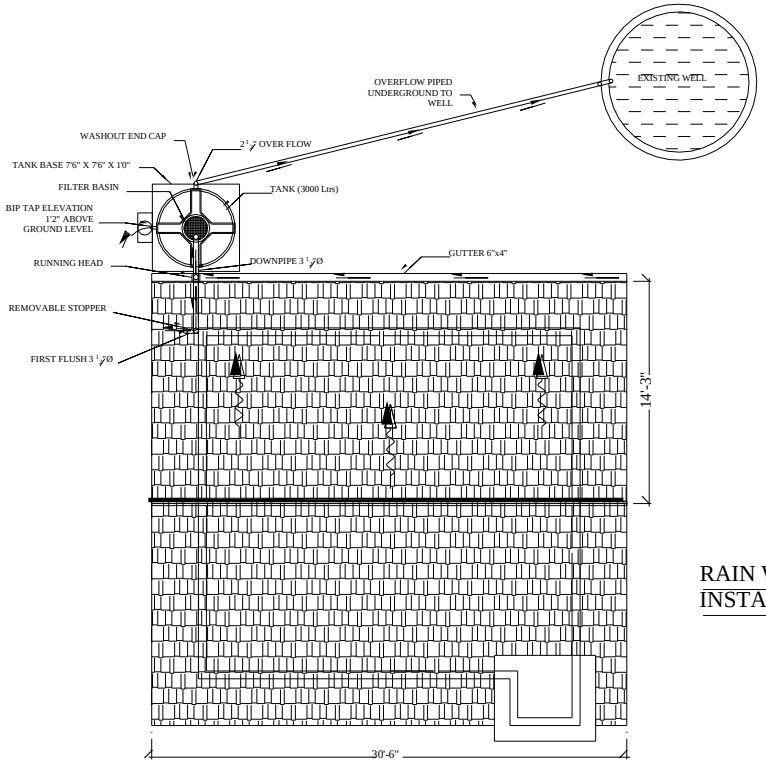
(BY COURTESY: PRACTICAL ACTION)

INDIAN HOUSING PROJECT

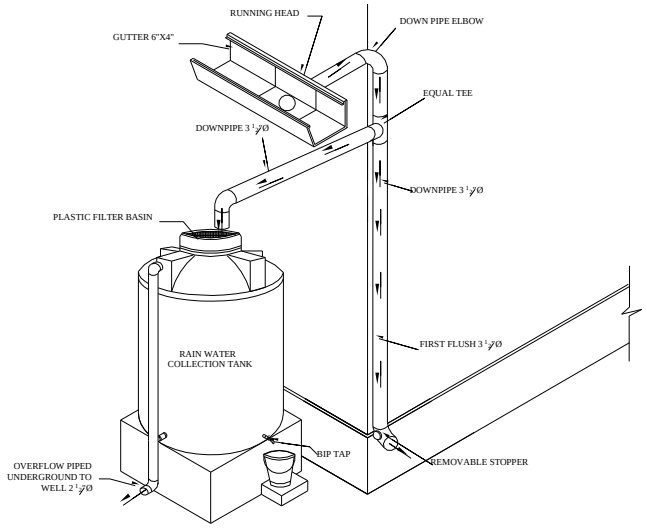
REPRODUCED BY:-
UN HABITAT

SCALE:-
2'0" TO AN INCH

DRAWING No:-
UNH/IHP/DP/002 R1



PLAN VIEW

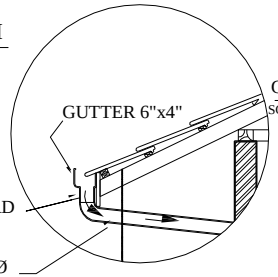


RAIN WATER STORAGE SYSTEM INSTALLED ABOVE GROUND

SCALE :- 2'-0" TO AN INCH

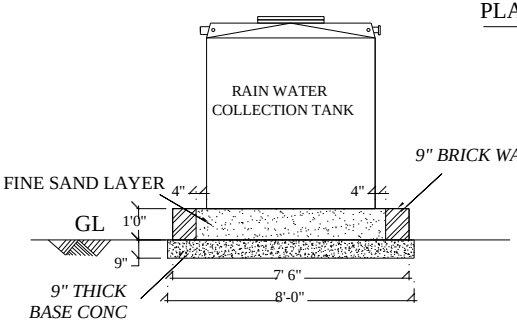
TABLE OF SPECIFIED DIMENSIONS

Apporximate height to gutter		10'-0"
Valance board		9" x 1"
Square gutter		6"X4"(150mm x100mm)
	Fall (v:h)	1:400
	Distance between gutter bracket	15" (375 mm)
Down pipe diameter		3 1/2" (90mmØ)
Tank base		
	Elevation above ground level	1'0" (300 mm)
	Plan	7'6"x7'6"(2.25mx2.25m)
	Tank base concrete	8'0"x8'0"(2.40mx2.40m)
Tank		
	Volume	3000 Ltrs
	Diameter	1615 mmØ
	Tank height	1840 mm
Tap elevation		1'2"(350mm)
Over flow pipe		
	Diameter	2 1/2" (75 mmØ)
Washout end cap		
	Diameter	2"Ø (63mm)



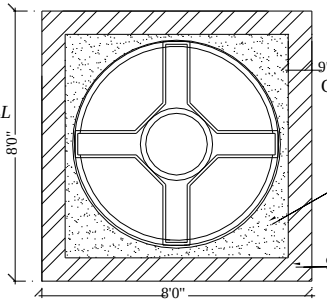
GUTTER DETAIL

SCALE :- 2'-0" TO AN INCH

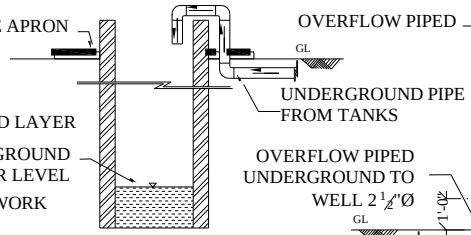


CROSS SECTION OF TANK BASE

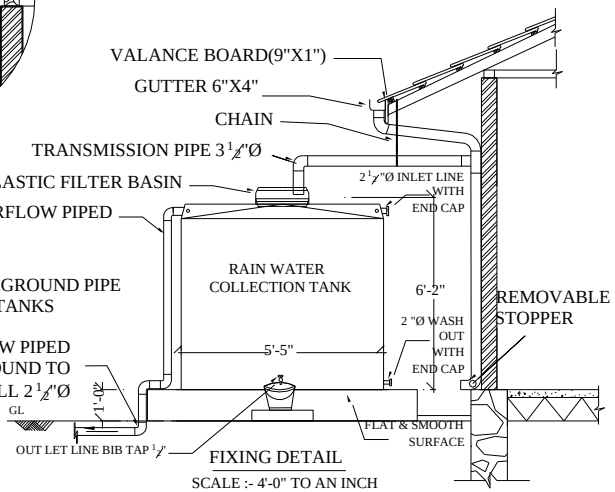
SCALE :- 4'-0" TO AN INCH



VIEW FROM TOP



CROSS SECTION THROUGH WELL



FIXING DETAIL

SCALE :- 4'-0" TO AN INCH

TYPICAL DOMESTIC RAINWATER HARVESTING SYSTEM

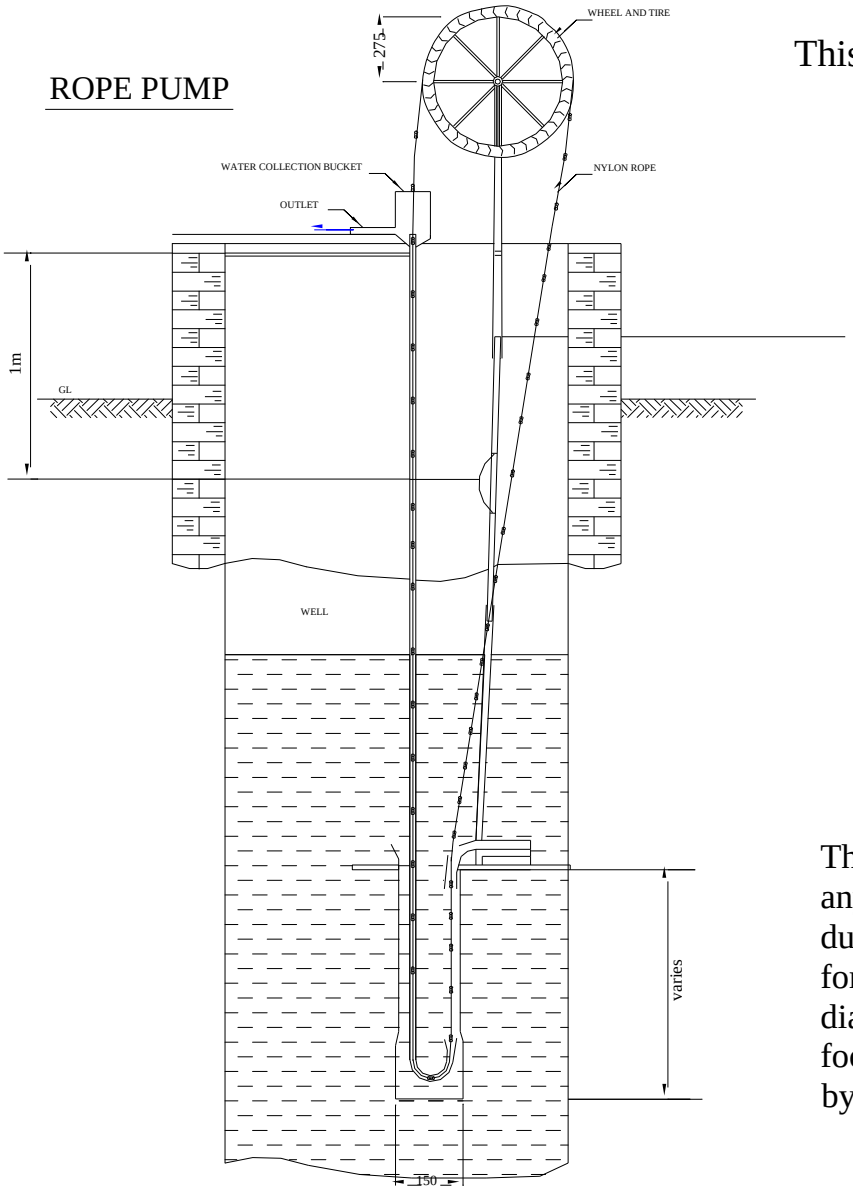
(STORAGE TANK CAPASITY 3000 Ltrs)

INDIAN HOUSING PROJECT

DESIGNED BY:- UN HABITAT

DRAWING No:- UNH/IHP/DP/R 005

ROPE PUMP

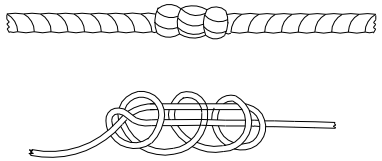


This rope pump introduced by NERD has fllowing features -

- No fuel cost for water pumping
- Easy manual operation
- Low installation cost
- Easy and low cost maintenance
- Can lift water upto 50 feet

DIAMETER OF ROPE

1" Ø PVC PIPES	8 mm
¾" Ø PVC PIPES	6 mm
½" Ø PVC PIPES	4.5 mm



The main component of the Rope Pump is it's rope.You can use any suitable rope but a nylon rope is most suited for it's durbility.what is important is the knot.A special knot is needed for lifting water.The way knot is made is shown in the diagram.The distance between the knot should be around one foot.You can train to make this knot by practicing it repeatedly by using a pice of rope.

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India-Sri Lanka Friendship

DETAIL OF ROPE PUMP

BY : National Engineering Research and Development Centre (NERD)

INDIAN HOUSING PROJECT

DESIGNED BY:-
UN HABITAT

DRAWING No:-
UNH/IHP/DP/004

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