

2 Soil mixture

If too dry

If too clayey

Add water little by little from a bottle and not directly from a bucket.

Add sand little by little from a scoop.

3 Prepare for ramming

Mix the soil properly.

Prepare to carry the soil for ramming.

Soil test

If a ball collapses, the soil is not appropriate

Lump test

Make a ball

Drop a ball

suitable for use

Checklist

I Material

- Was the soil mixture found appropriate by the tests ?

II Foundation

- Excavated 3 feet depth trench to construct a foundation ?
- Maintained appropriate overlapping length of the rebar for the footing? (It should be more than 3ft for the main rebar of the RC footing and more than 2ft for the vertical rebar)
- Placed vertical rebars at all the necessary locations ?
- Maintained enough concrete cover for the RC foundation ? (It should be more than 3 inches)
- Was concrete filled up properly around the vertical rebar ?
- Kept the adequate concrete curing period ?

III RC band and post

- Maintained appropriate overlapping length ?(It shall be more than 3ft for the main rebar of the RC band and more than 2ft for the RC post)
- Maintained enough concrete cover for the RC band ? (It should be more than 2 inches)
- Was concrete filled up properly around the vertical rebar ?
- Kept the adequate concrete curing period ?

IV Rammed earth

- Was any provision kept for fixing ju-shings ?
- Was the soil compacted until it is 2 inches thick ?
- Was the soil around the RC post compacted well ?
- Were the formworks arranged in a staggered pattern ?

Publication information

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For more details, visit: <http://doc.gov.bt/> and <http://moit.gov.bt/>



I Material

MASON

1 week

Total (1-3)

SOIL
SAND

STONE
MIXED

1 Soil for ramming

Collect soil of good quality.

well mixed soil

Crush chunks of soil.

too rough

Remove pebbles larger than 1cm.

too fine

Soil test

Add moisture

Make a ball

Dry in sun

If cracks are visible, the soil is not appropriate

The Manual for Construction of RAMMED EARTH

II Foundation

MASON



1 Earth work



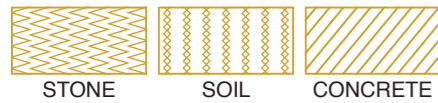
2 Concrete foundation



Curing concrete



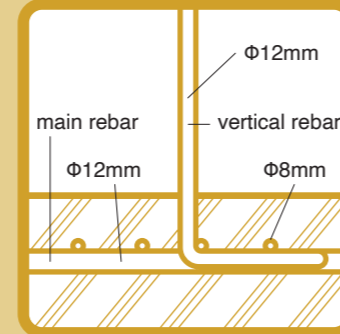
3 Stone foundation



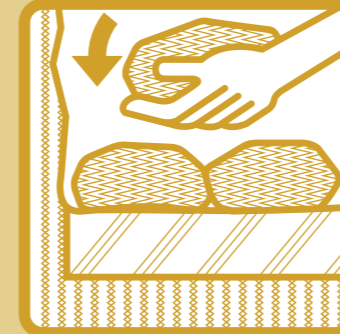
1 Earth work 2 RC Strip footing 3 RRM wall footing



Dig a trench 3ft deep and 4ft wide. Provide soling.



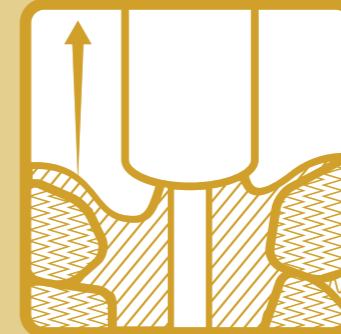
Arrange 3 nos of main rebar with stirrups, and erect vertical rebars. Cast M20 concrete 7.2 inches thick.



Construct stone footings 4ft wide and 2ft high. Build foundation walls up to the plinth level.

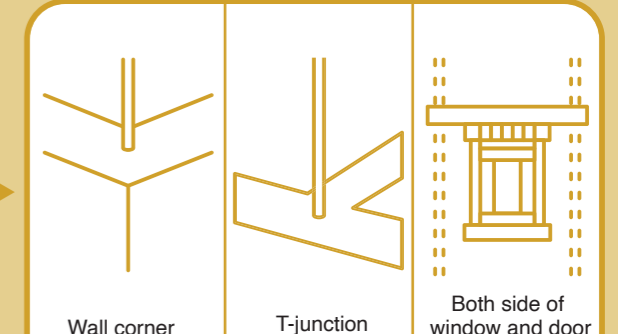


Set a PVC pipe around a vertical rebar before placing stones.



Cast M20 concrete in the pipe and then pull out the pipe.

Rebar Location



Wall corner T-junction Both side of window and door
Addition to the above, at every 4ft

III RC band and post

MASON



1 Construction of a band



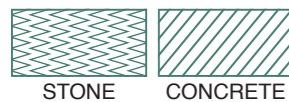
Curing concrete



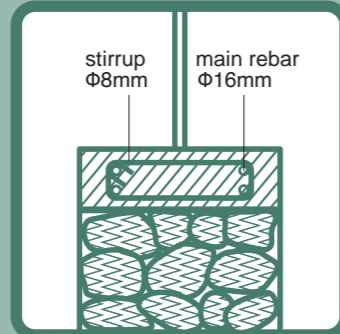
2 Casting concrete of posts



Curing concrete

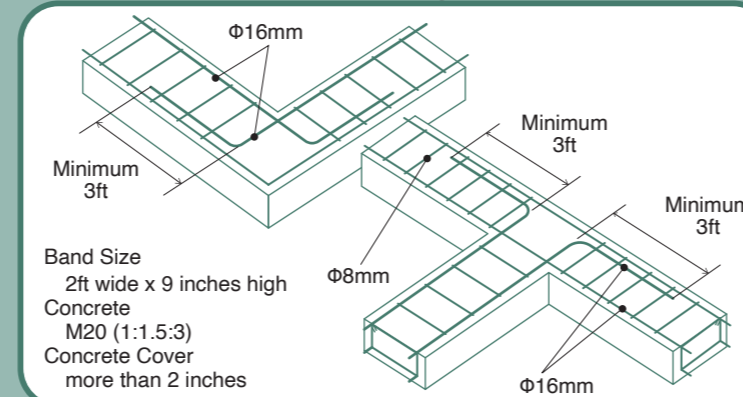


1 RC band



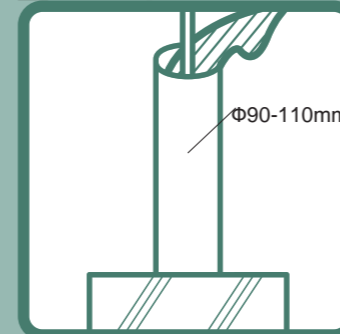
Construct RC band on the stone foundation and below cham on each floor.

Rebar arrangement



Band Size
2ft wide x 9 inches high
Concrete
M20 (1:1.5:3)
Concrete Cover
more than 2 inches

2 RC post



Cast M20 concrete around a vertical rebar using a PVC pipe.

IV Rammed Earth

CARPENTER



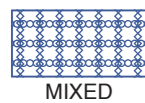
1 A unit of formwork



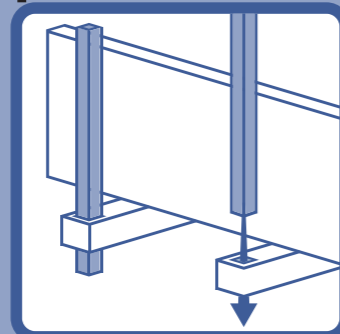
2 Compaction of soil (for each formwork)



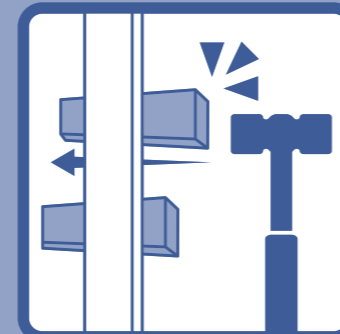
3 Rammed earth wall construction (for each floor)



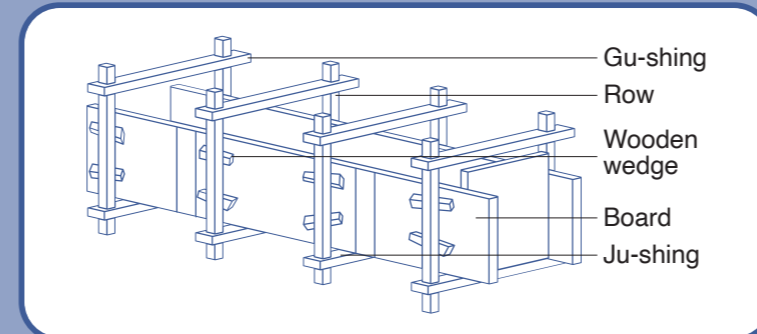
1 Formwork



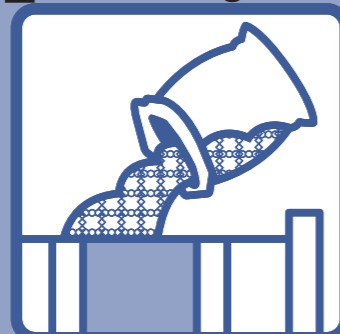
Keep provision to fix ju-shings (Do not chip a RC band).



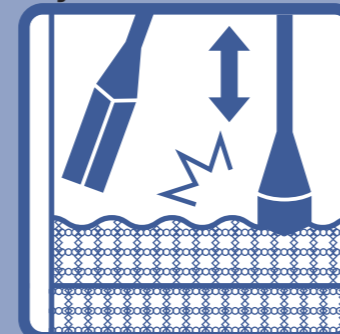
Fix the formwork firmly.



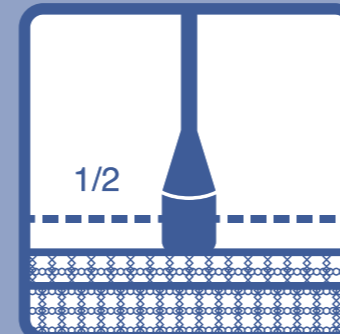
2 Ramming of one layer



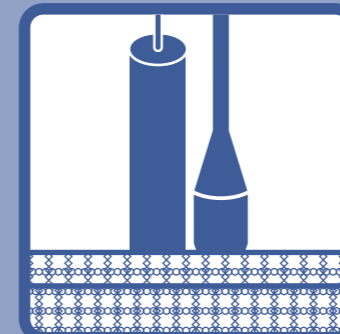
Fill the formwork with 4 inches of soil.



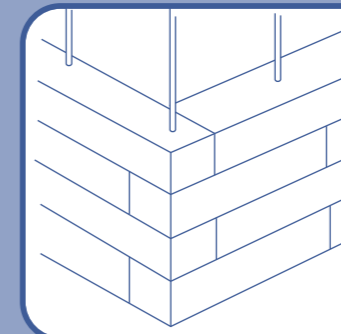
Use right tool to compact edge and plane.



Compact the soil until it is 2 inches thick (Half of 4 inches).

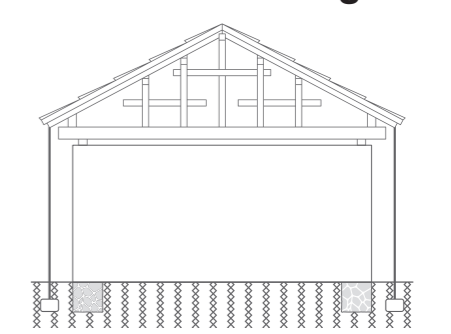


Compact well around the RC post.

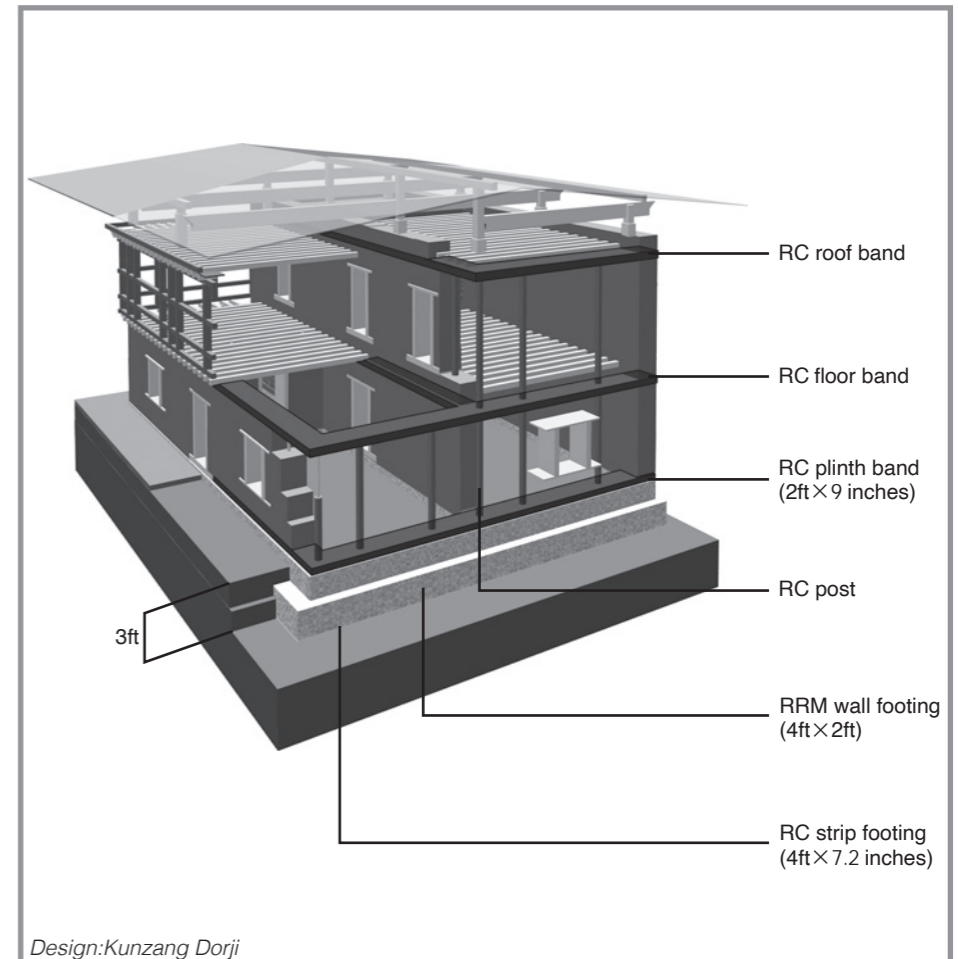


Arrange the formwork in a staggered pattern.

Roof anchoring



Anchor a roof to the ground. Do not anchor to the RC band.



Design: Kunzang Dorji

