



Caritas Nepal

CATHOLIC RELIEF SERVICES

Nepal Earthquake 2015

Build Back Safer – Demonstration Model(WALL)

faith. action. results.

Purpose of construction of demo wall

- **This is an introduction to provide technical support to the communities to build back safer.**
- **We are just following published Guidelines and sharing it.(NSET,NBC,SDC etc.)**
- **This design of this Demo wall will be suitable for the place where mud, stone and wood are locally available.**
- **To provide some improved basic guidelines for mud mortar stone masonry buildings to make it more earthquake resistant.**

Objectives

- **To allow communities to observe the process as well as having access to a physical reference for their own construction.**
- **The models are located at central locations for maximum exposure to the community.(in central ward of VDCs)**
- **As an introduction to complimentary technical support to assist communities during construction**
- **Select up to 9 experienced masons from each ward to participate in construction as on the job learning process.**
- **The models can be changed and improvised according to local availability of construction materials.**

Materials required for Construction of Demo Wall.

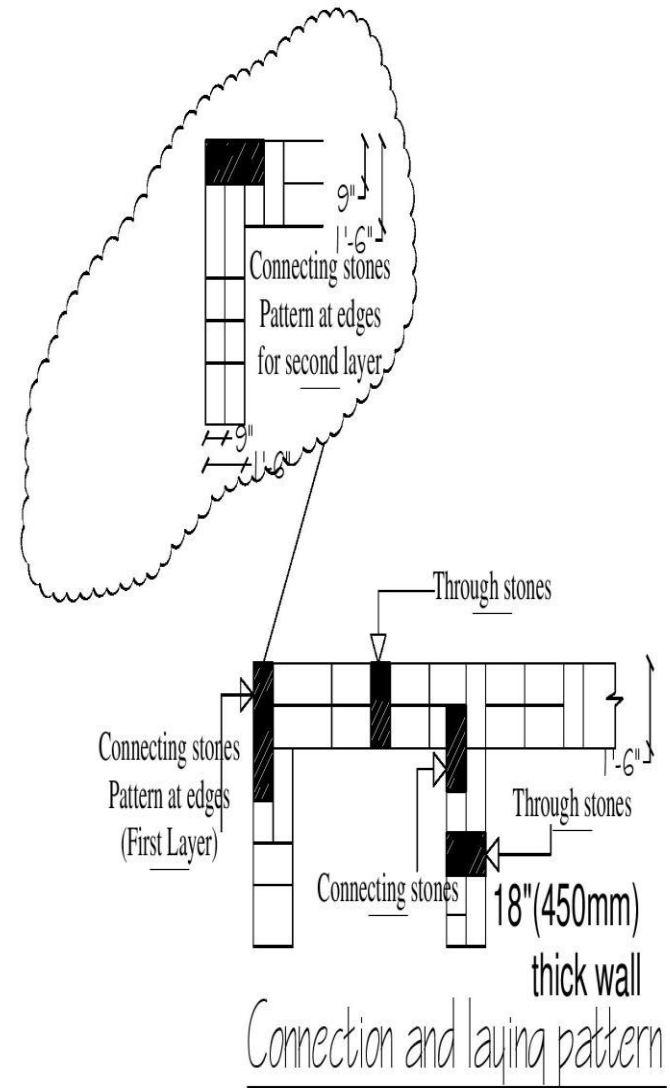
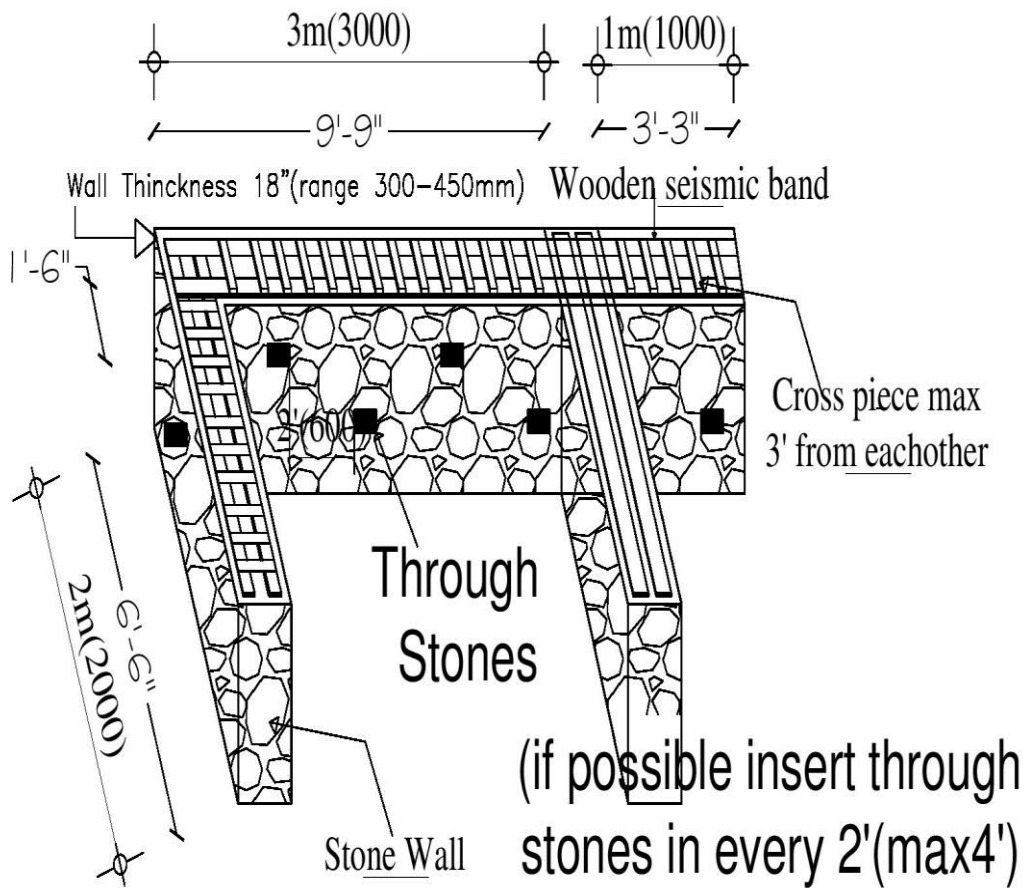
1. Stone- 3 tractor
2. 3”(inch) Nails- 1/2 kg.
3. Mud- Locally available
4. Water-Locally available
5. Wood – 107 feet of Sal wood(3”x3”)
6. Building equipments and tools are brought by skilled masons.

Cost can be minimized in various ways (For real construction)

Cost break down of the demo wall training

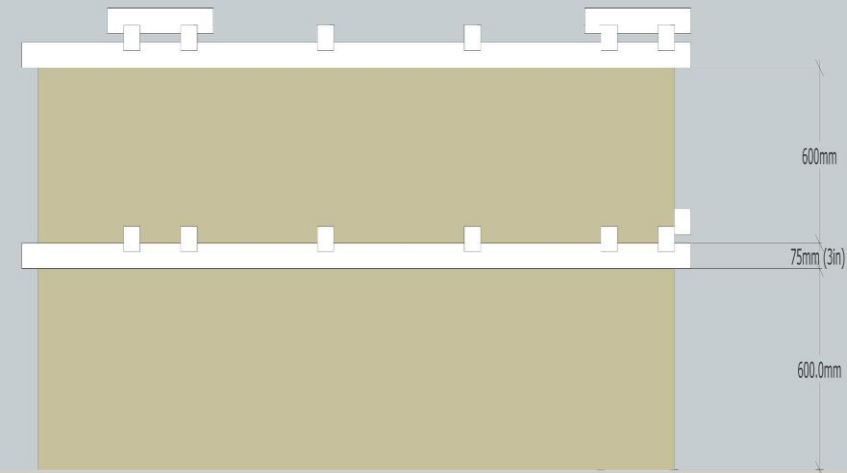
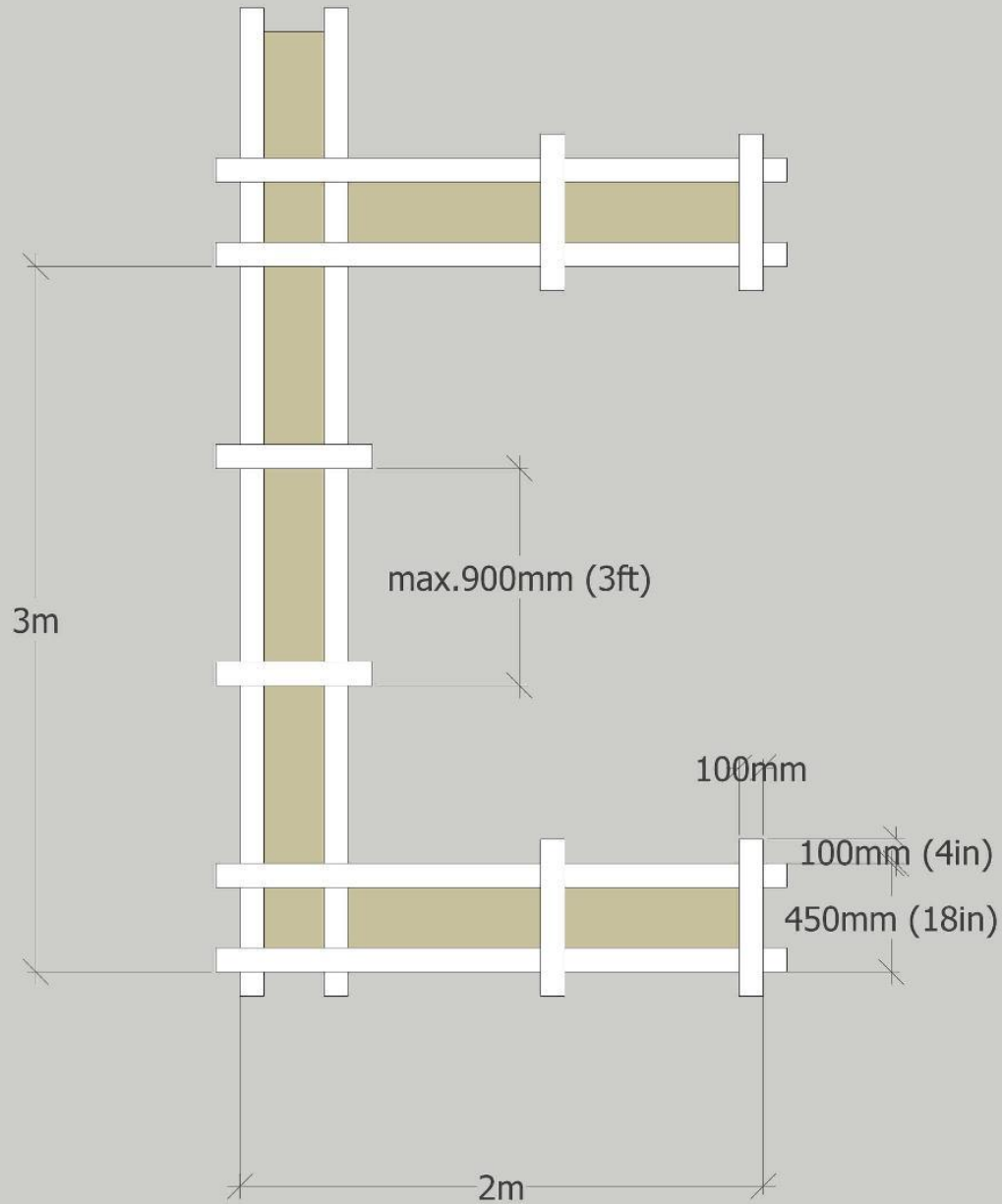
S No.	Description	Rate	Quantity	Amount(NPR)
1	Stone(per tractor)	2500	3	7500
2	Transportation and loading charge for stone per tractor	1000	3	3000
3	Timer (Sal Wood) (3”x3”)(3inchx3inch)per feet	250	107	26750
4	Meals provided to 11 labor for 3 days(Rs 40 per labor)	40	29	1160
5	Daily wages provided to 11 labors i.e. Rs 800 per day	800	32	25600
Total cost for the training(which include construction materials and daily wages for trainee)				64010.00
Sixty four thousand and ten rupees only.				

Designs and Guidelines



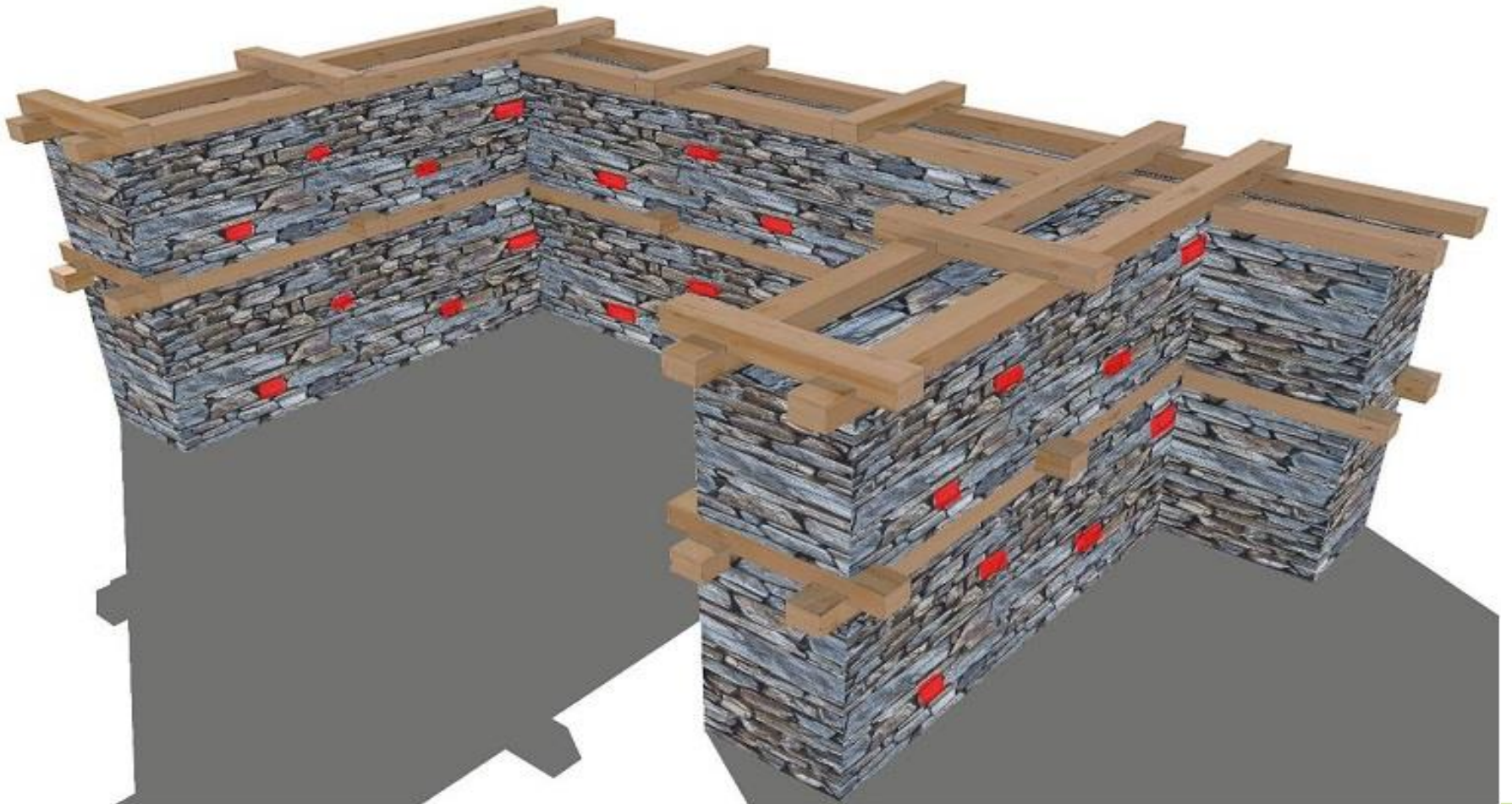
Isometric view & Dimension for section of wall

Designs and Guidelines(Dimension for wooden seismic band Construction)



Design and Guidelines(3-d view of wall)

- Red colored stones are through stones placed on the wall during construction at every 600mm after each 2 layer.



Technical points to be considered during Construction.

- Points to be remembered during construction of stone wall
 - a. Through stones must be placed at every 600mm of the wall and in every two layer of stone wall.
 - b. Partition wall must be provided with connecting stones(T shape would be more preferable).

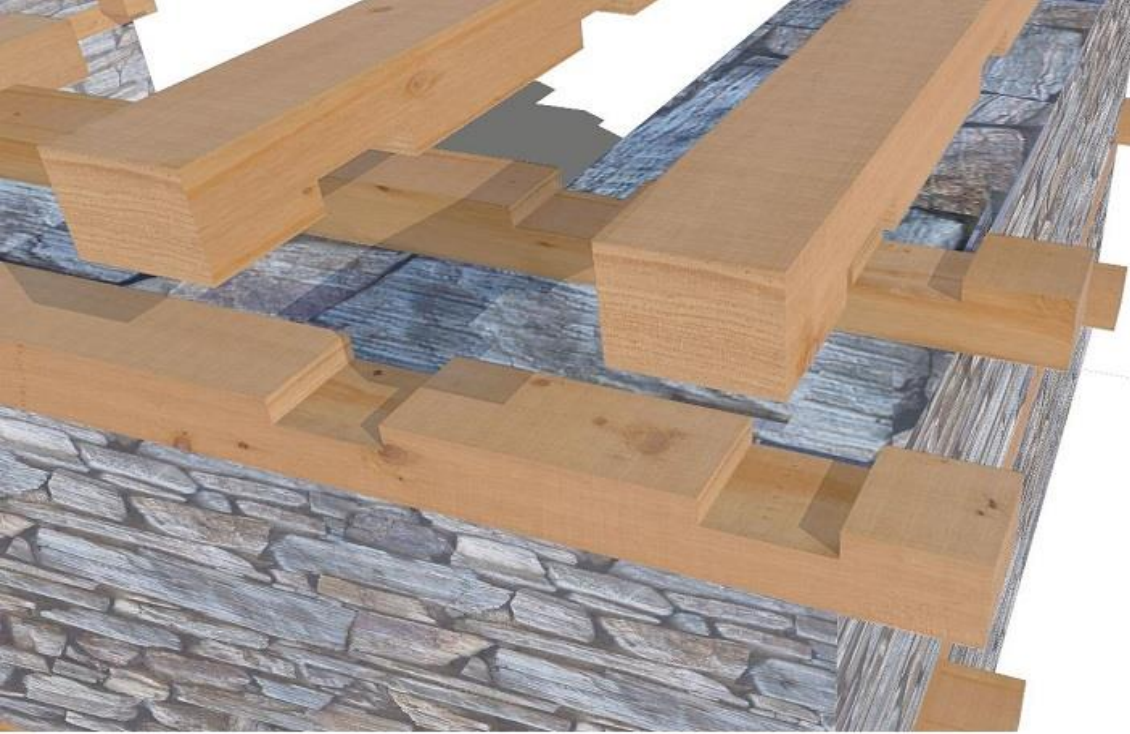


Connecting stones at the edges



Connecting stones are placed perpendicular to each other (at right angle) after every alternate layers.

Points to be considered during construction of wooden seismic band and joint details. (Option-1)



Corner joint (Creating the notch and leaving 4 inch projection outside the wall will give more strength to the Band but that 4 inch section will be exposed outside so more chances of decaying(if treatment is not done).



Option-2 (For corner joint)



First layer of wooden seismic band was constructed without projecting 4 inch outside the wall and it will be safe as wall can be plastered with timber inside the wall .But it is less stronger than the projected seismic band.

Type of joints

Kashmiri joint



Lap joint



**Cross ties should be
Inserted at every
600-900mm(max)**



Better ways to insert nails.

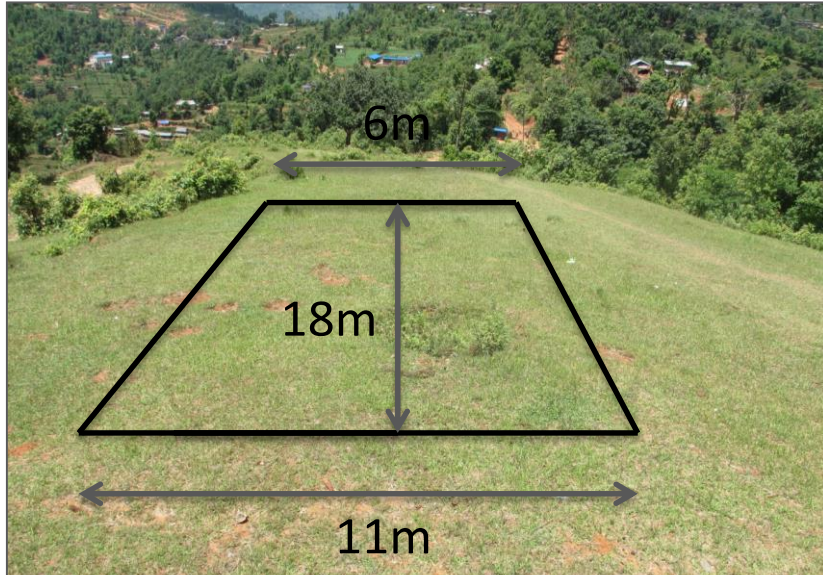


1. Nails should be hammered in slanting position

2. Timber should be nailed in four direction with four nails.

Construction procedure of Demo wall

1. Selection of site (Government land in the central location as proposed by Bungkot VDC Secretary and other VDC Representatives).



2. Setting out and orientation for Construction of pilot demo wall.



3. Completion of first layer of 600mm (2 feet) Wall from DPC level(Plinth Level)





4. All masons learning and participating in carpentry work.



5. Completion of first layer of wooden seismic band.



6. Completion of second layer of stone wall at 600mm from first wooden seismic layer.

7. Completion of construction of demo wall with exposed second layer of Wooden seismic band.



8. Interaction and feedback program between CRS and skilled labor (trainee) who participated in Construction of demo wall.



Feedback from Skilled labors(trainee)

- **Good experience and things they learned are:**
 - a. **Stone masonry**
 - b. **Use of timber as seismic band**
- **If CRS organize any other trainings related to build back safer construction they will be very happy to participate.**
- **They have seen and worked in similar type of stone masonry construction but they didn't know why those connecting and through stones were used and the guidelines to use it.**
- **They have seen timber bands used in their ancestor's houses but only used at high level above the doors. They have never learnt to build timber seismic band**
- **They will share this knowledge of construction with other masons from their VDC and ward.**

Conclusion

- **People were so excited to learn about new techniques and the construction method.**
- **About 50 people visited the construction site.**
- **We successfully shared information that CRS is only providing the safer construction techniques and knowledge which they need to adopt and build their home safer by themselves.**
- **Response was very good from VDC secretary, Local VDC representatives and local people in BUNGKOT VDC.**

*******THANK YOU*******

