

MHERCHYA KUMA (Traditional Hyolmo House)

Helambu Housing Reconstruction Programme

Prepared by:
**Aashraya Nepal in Association
with HEAL Nepal and Hyolmo
Foundation**

Submitted to:
**National Reconstruction
Authority, Kathmandu, Singha
Durbar**

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Patandhoka, Lalitpur, Nepal

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REINFORCED CEMENT CONCRETE (RCC), TWO-STOREY

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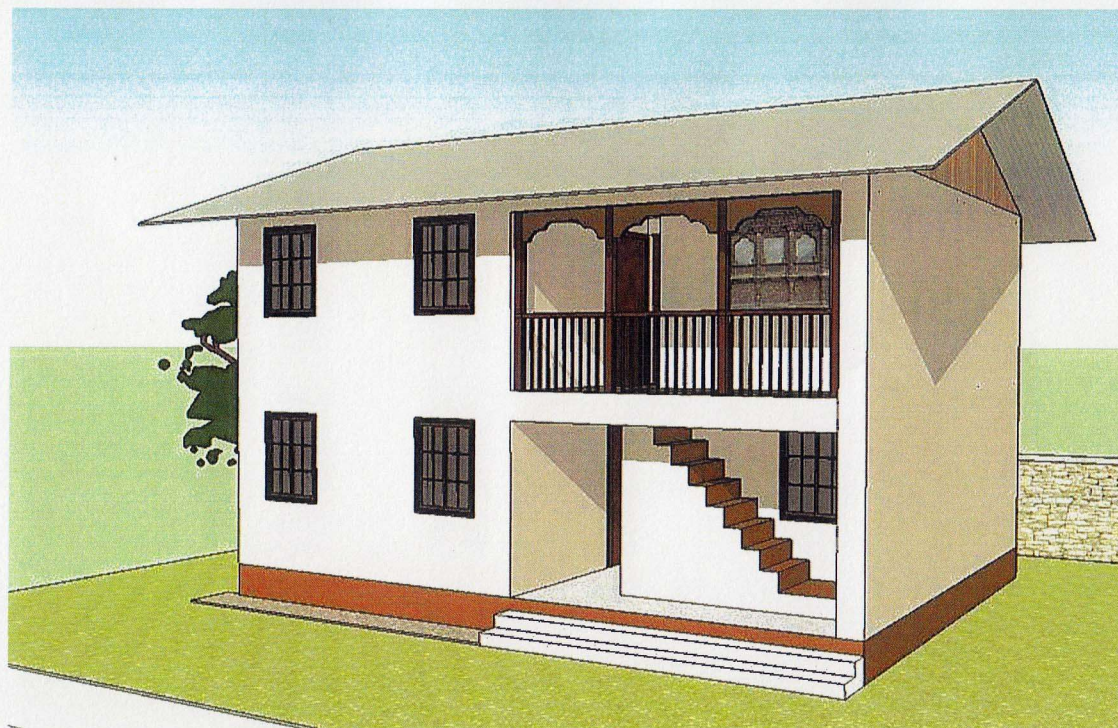
RCC

Model RCC is a two storey building called “Mherchya Kuma” which consists of four bedrooms of dimensions 13’6”x9’3” and 9’2”x9’11” and a kitchen of dimension 14’2”x14’6”.

The design depicts vernacular architecture and traditional lifestyle of Helambhu region and focuses on earthquake resistant construction. RCC frame structure and Brick infill has been used (as cement can be transported with good road access and residents can afford it with income from tourism), where CGI sheet is used for covering the roof along with Metal Truss and purlins. The model has been based on the revised National Building Code of Nepal(NBC) in order to ensure that earthquake resistant construction measures are included. Climatic conditions and socio-cultural aspects have also been factored into the design of the house. The design concept and the objective of the design is to vernacular architecture and traditional lifestyle contributing towards resilient models to improve safety in future earthquakes.

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Materials	Quantity	Unit
Brick	28496.38	Number
Cement	331.31	Bags
Sand	41.13	cu.m
Aggregate	33.40	cu.m
Rebar	4034.57	Kg
MS Pipe	672.20	Kg
Wood	1.36	cu.m
CGI sheet	5.37	Bundle

Labors	Man Day
Skilled	550.53
Unskilled	689.92

Government of Nepal
Ministry of Urban Development
Central Level Project Implementation Unit
Babarmahal, Kathmandu
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TYPE OF HOUSE: MODEL RCC

DRAWING TITLE: PERSPECTIVE AND ESTIMATION

SCALE: NONE

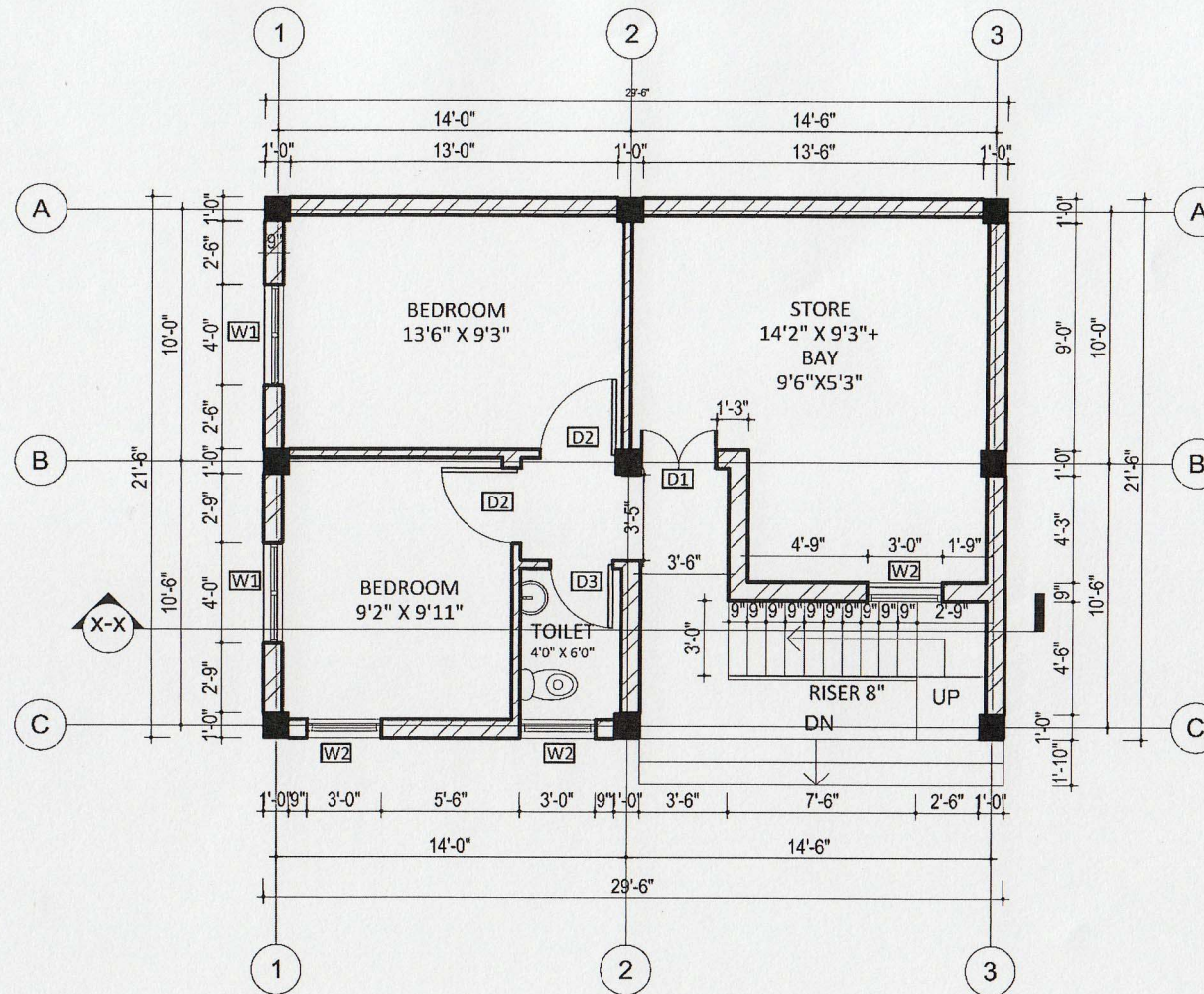
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RCC

1/13

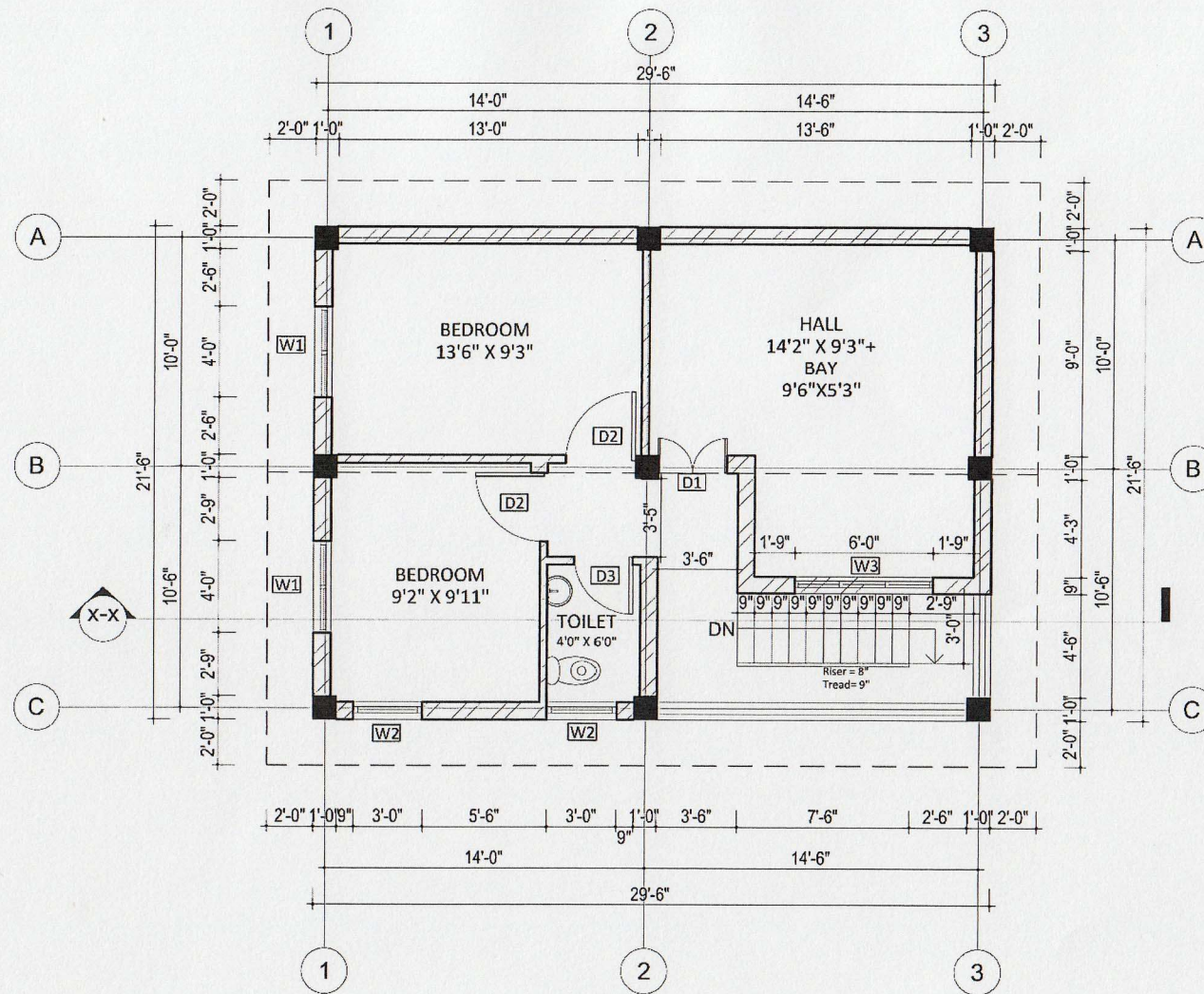


GROUND FLOOR PLAN
AREA- 634.25 Sq.ft

Department of Herald
City of Urban Development
Local Project Implementation Unit
Babarmahal, Kathmandu
Nepal

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	TYPE OF HOUSE:	MODEL RCC	SCALE:	1"=8'	DATE:		RCC 2/13
	DRAWING TITLE:	PLAN	DESIGNED BY:	Aashraya Nepal			



FIRST FLOOR PLAN
AREA- 634.25 Sq.ft

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Ministry of Urban Development
Central Level Project Implementation Unit
Babarpur, Kathmandu

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TYPE OF HOUSE: MODEL RCC
DRAWING TITLE: PLAN

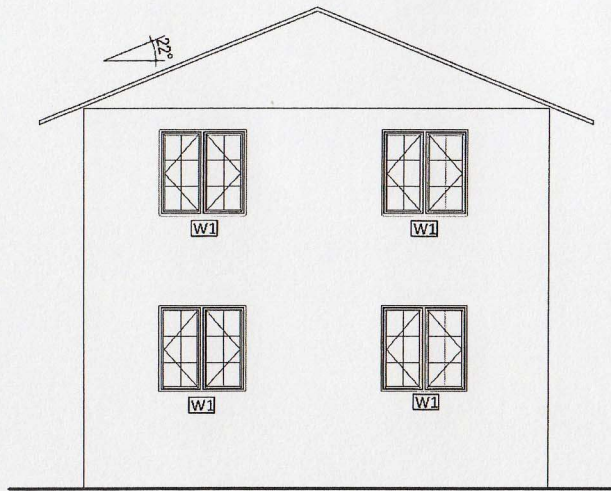
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DATE:

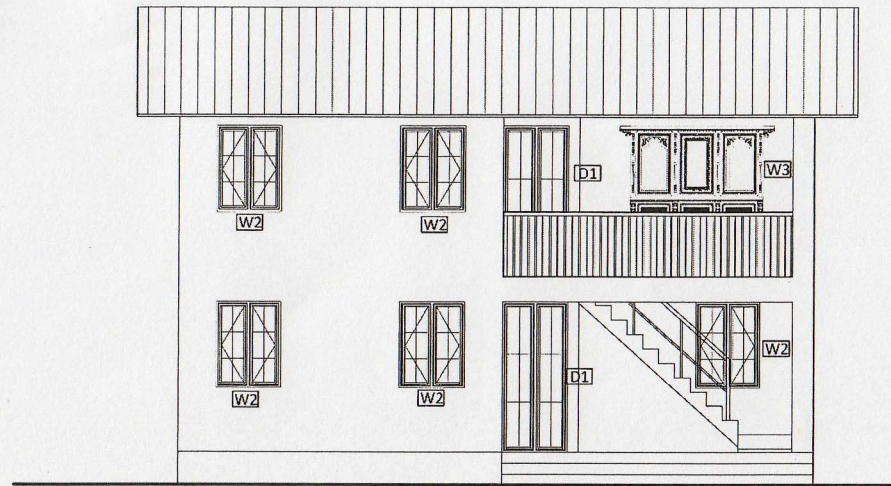
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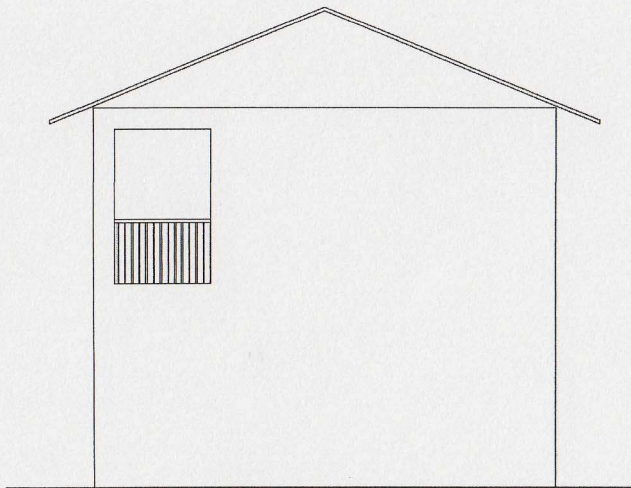
RCC
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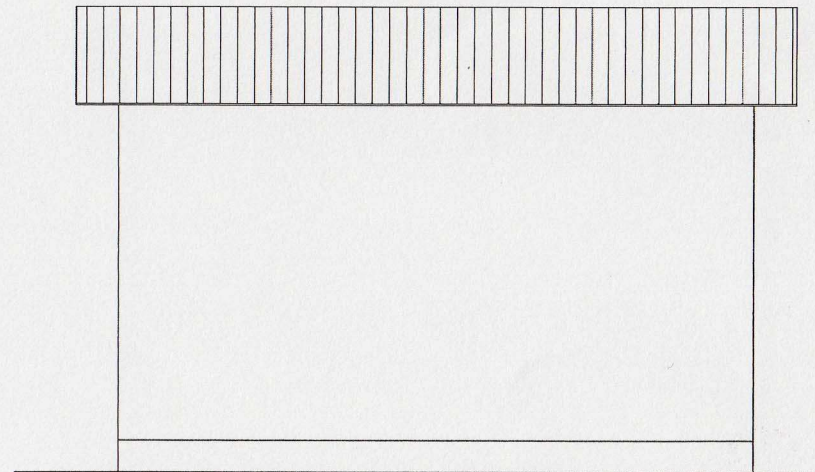
RIGHT ELEVATION



FRONT ELEVATION



LEFT ELEVATION



BACK ELEVATION

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Nepal

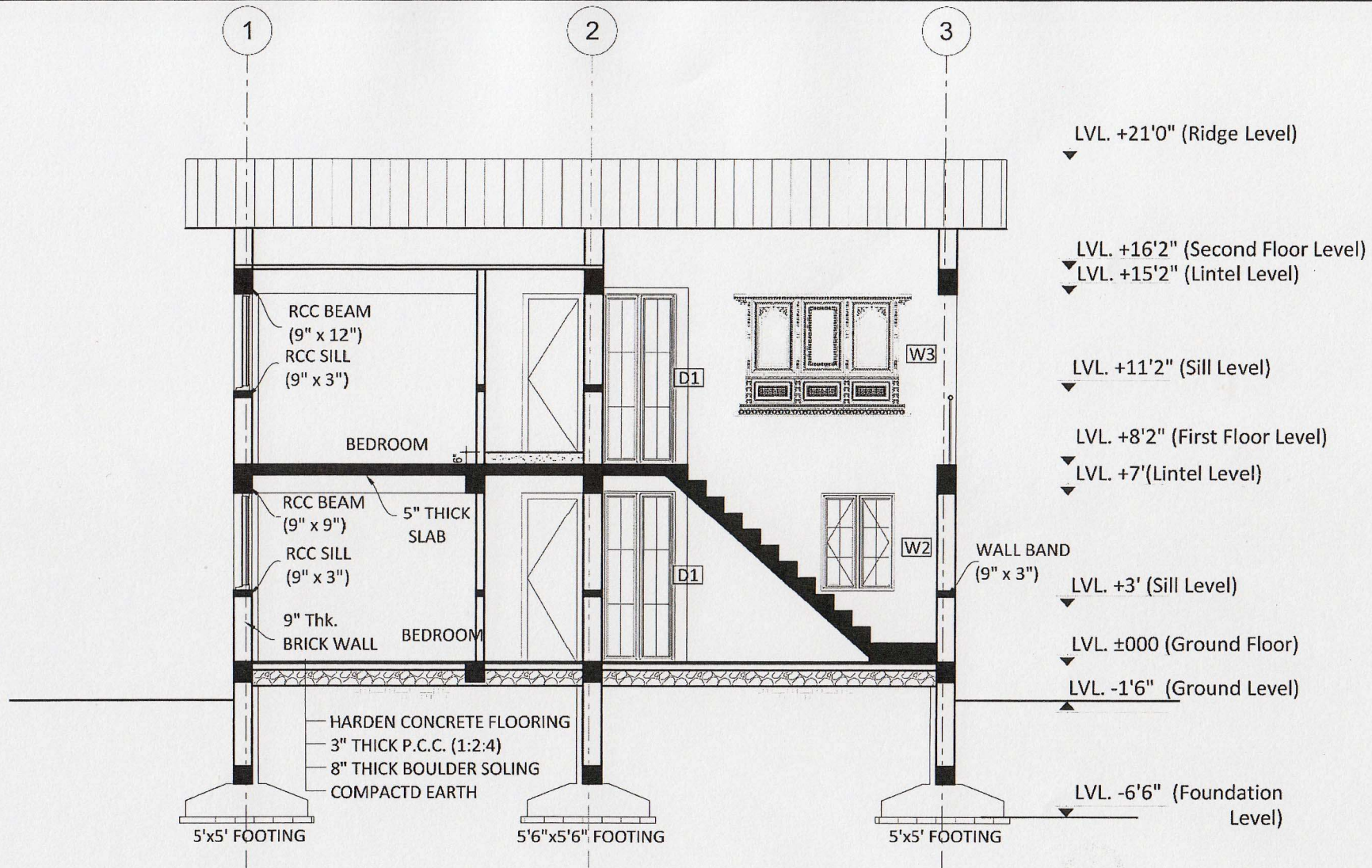
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TYPE OF HOUSE: MODEL RCC
DRAWING TITLE: ELAVATION

SCALE: 1"=8'

DATE: **Aashraya** RCC
नेपाल 4/13

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SECTION AT X-X

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Baramahal, Kathmandu

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TYPE OF HOUSE: MODEL RCC
DRAWING TITLE: SECTION

SCALE: 1"=8'

DATE:

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1. READ STRUCTURAL DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL, SANITARY & ELECTRICAL DRAWINGS. REPORT ANY DESCREPANCIES TO THE SITE ENGINEER PRIOR TO FABRICATION OR CONSTRUCTION.

2. CONTRACTORS SHALL BE RESPONSIBLE FOR CHECKING FIELD DIMENSIONS & SITE

3. UNLESS OTHERWISE INDICATED ALL CONSTRUCTION JOINTS SHALL BE ROUGHENED JOINTS

4. NO MEASUREMENTS SHALL BE DIRECTLY TAKEN FROM THE PRINT, WRITTEN DIMENSION

5. ALL DIMENSIONS ARE IN INCHES & FEET UNLESS NOTED OTHERWISE.

2. SOIL BEARING CAPACITIES SHALL BE VERIFIED IN THE FIELD & NOTIFIED ENGINEER IMMEDIATELY OF ANY SOFT POCKETS OR OTHER ADVERSE SOIL CONDITIONS ENCOUNTERED.

3. THE LINE OF SLOPE BETWEEN ADJACENT EXCAVATIONS FOR FOOTING OR ALONG STEPPED FOOTING SHALL NOT EXCEED A RISE 1 IN A RUN OF 2. 4. PLACING OF FOUNDATION CONCRETE SHALL BE DONE AS SOON AS EXCAVATIONS HAVE BEEN COMPLETED & APPROVED BY THE SITE

1. CAST-IN-SITU CONCRETE SHALL HAVE A MINIMUM 28 DAYS COMPRESSIVE CUBE STRENGTH OF 15N/sq mm , FOR COLUMNS AS WELL AS 15N/sq mm FOR BEAMS & SLABS & 15N/sq mm FOR OTHER STRUCTURAL MEMBERS LIKE SILL BANDS,LINTEL BANDS , PARAPET TOP ETC.

2. REINFORCING STEEL SHALL BE NEW HOT ROLLED DEFORMED BARS HAVING A MINIMUM YIELD 415 KN/sq mm IS 1786:1979 OR IS 1139:196 3. MINIMUM REINFORCING LAPS SHALL BE IN ACCORDANCE WITH IS 1786:1979 & AS SPECIFIED ON STRUCTURAL DRAWINGS.

4. COVER TO MAIN REINFORCING STEEL BE IN ACCORDANCE WITH IS 456:1978 & AS SPECIFIED ON

CLEAR COVER OF CONCRETE :

- SLAB = 20mm
- STAIRCASE = 20mm
- BEAM = 25mm
- COLUMN = 40mm
- FOOTING = 75mm

DEVELOPMENT LENGTH FOR TOR STEEL BAR

DIA	TENSION	COMPRESSION
8	400mm	360mm
10	500mm	450mm
12	600mm	540mm
16	800mm	720mm
20	1000mm	900mm
25	1250mm	1125mm

5. PROVIDE CORNER BARS TO MATCH HORIZONTAL REINFORCING STEEL IN SLAB.

6. PLUMBING SLOTS, HOLES, AROUND PIPES DUCTS OR OTHER ITEMS WHICH PASS THROUGH CONCRETE SLAB OR WALL SHALL BE FILLED & PATCHED TO THE SAME DEPTHS AS THE SLAB OR WALL.

7. UNLESS OTHERWISE INDICATED ALL HORIZONTAL & VERTICAL CONSTRUCTION JOINTS SHALL BE ROUGHENED JOINTS WITH 5mm MINIMUM AMPLITUDE.

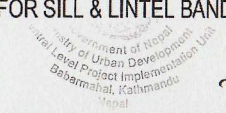
8. SLAB ON GRADE SHALL BE CAST IN PANELS BOUNDED BY COLUMN GRID LINES IN A CHECKED BOARD PATTERNS ALLOW AT LEAST 48 HOURS BETWEEN CASTING OF ADJACENT PANELS.

9. HANGING DEVICES FOR PIPING SHALL BE CAST IN BREAKING OUT CONCRETE FOR HANGING FROM REINFORCING BARS WILL NOT BE PERMITTED.

10. THE CEMENT USED SHALL BE ORDINARY PORTLAND CEMENT CONFORMING TO IS 269:1976. & MUST BE UDAYAPUR, HETAUDA OR APPROVED BY THE CLIENT.

11. BAR BENDING SCHEDULE SHALL BE SUBMITTED TO THE SITE ENGINEER FOR APPROVAL BEFORE LAYING.

12. CONCRETE MIX SHOULD BE M20 (1:1.5:4) WITH PLASTISIZER FOR COLUMNS, BEAMS & SLABS, M15(1:2:4) FOR SILL & LINTEL BANDS, PARAPET BANDS ETC.



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TYPE OF HOUSE: MODEL RCC

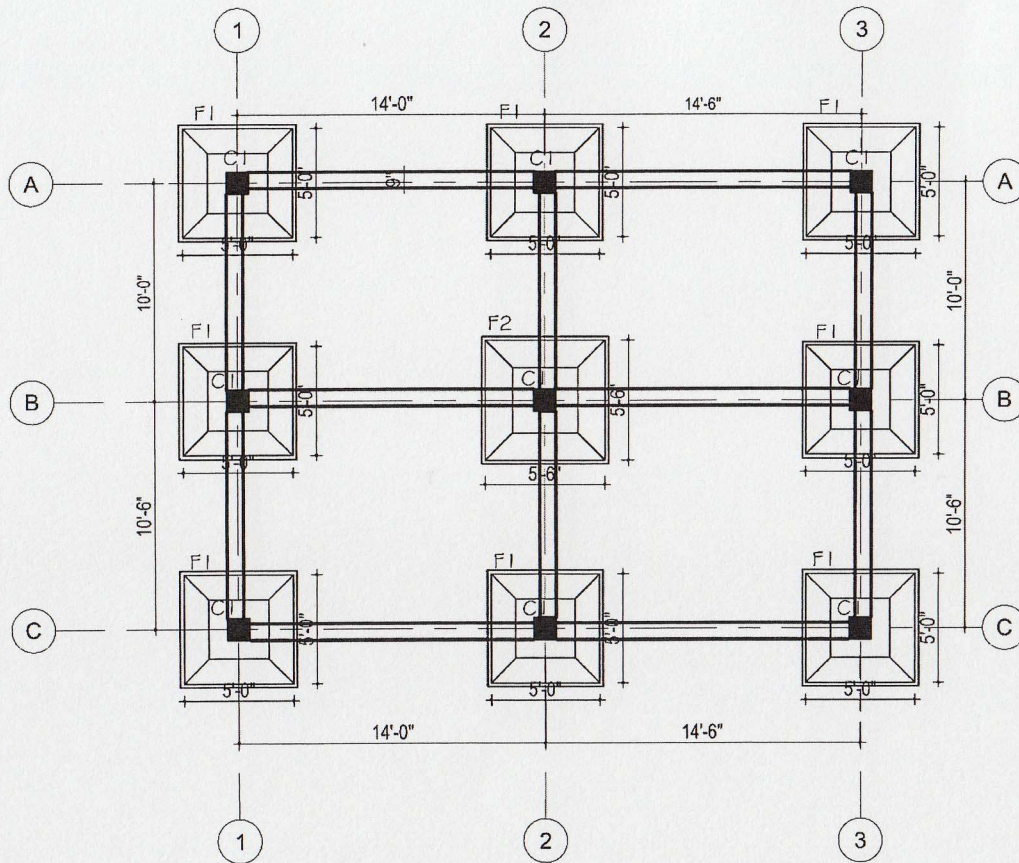
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SCALE: None

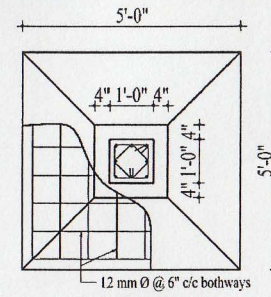
DATE:

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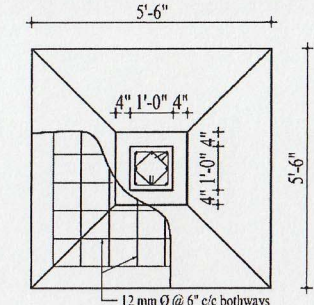


TRENCH / COLUMN / BEAM LAYOUT PLAN
Scale- 1"=8'-0"



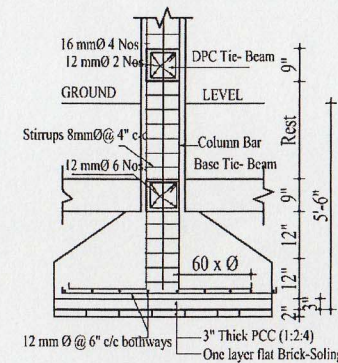
FOOTING PLAN

Scale - 1" = 4'-0"



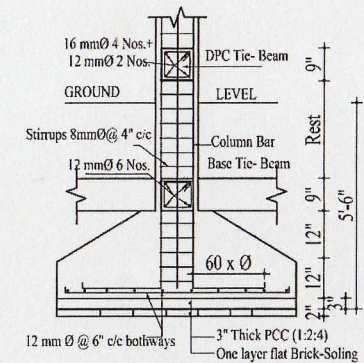
FOOTING PLAN

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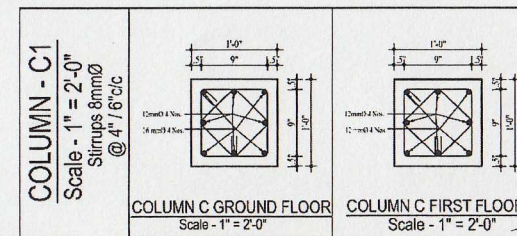
FOOTING - F1

Scale - 1" = 4'-0"



FOOTING - F2

Scale - 1" = 4'-0"

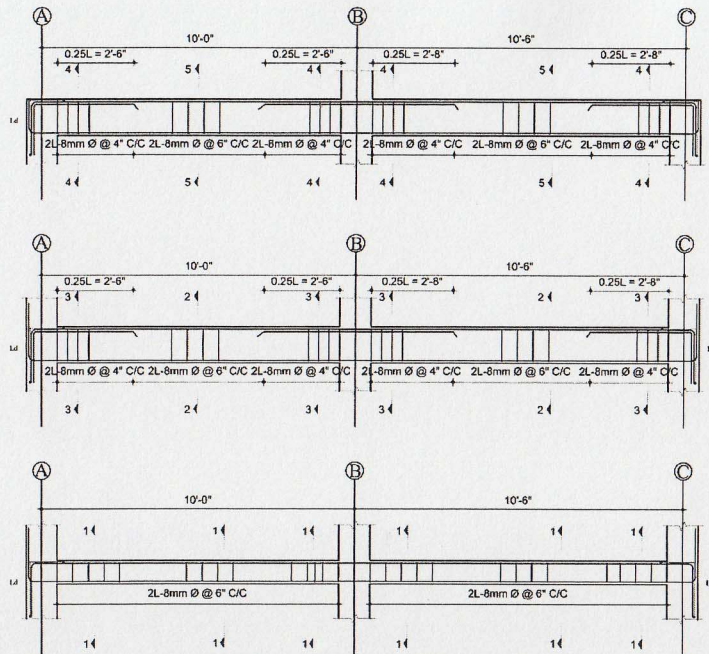


COLUMN - C1
Scale - 1" = 2'-0"
Stirrups 8mmØ
@ 4" c/c

COLUMN C GROUND FLOOR
Scale - 1" = 2'-0"

COLUMN C FIRST FLOOR
Scale - 1" = 2'-0"

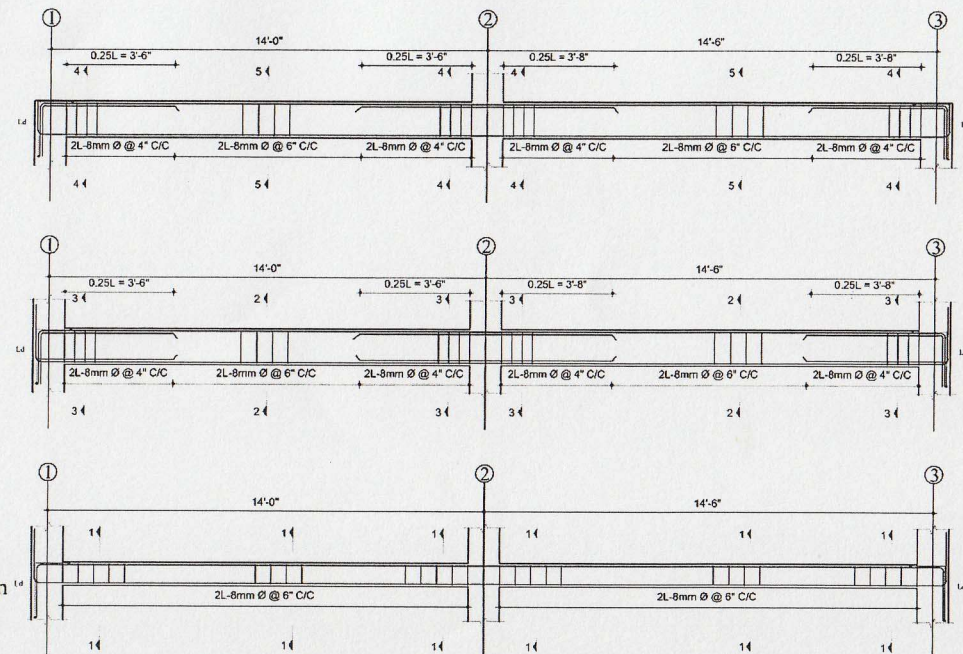
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Nepal



Second Floor

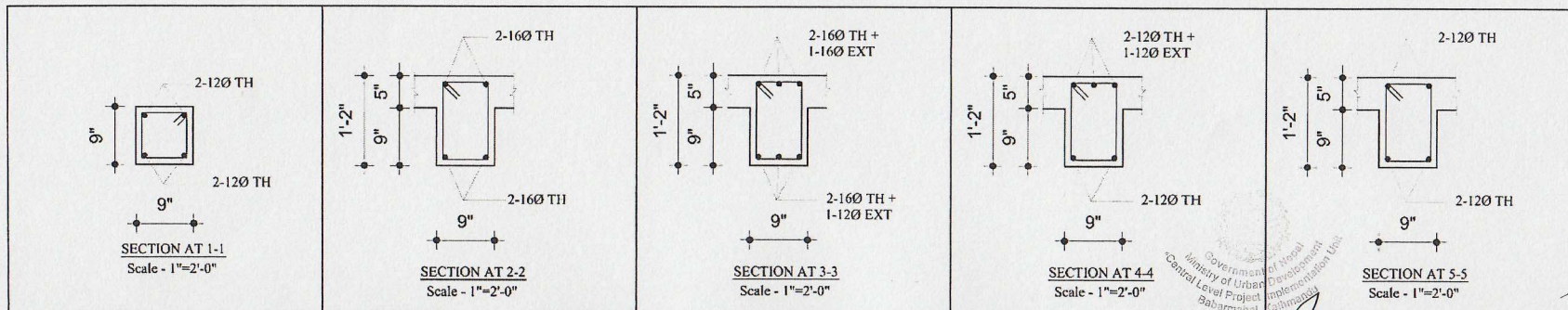
First Floor

Plinth & Foundation Beam



Typical L-Section Along Grid
1-1,2-2 and 3-3
Scale 1":4'-0"

Typical L-Section Along Grid A-A,B-B
AND C-C
Scale 1":4'-0"



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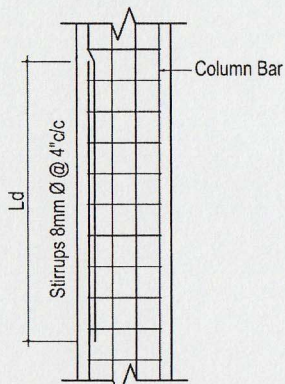
TYPE OF HOUSE: MODEL RCC

DRAWING TITLE: STRUCTURAL DETAILS

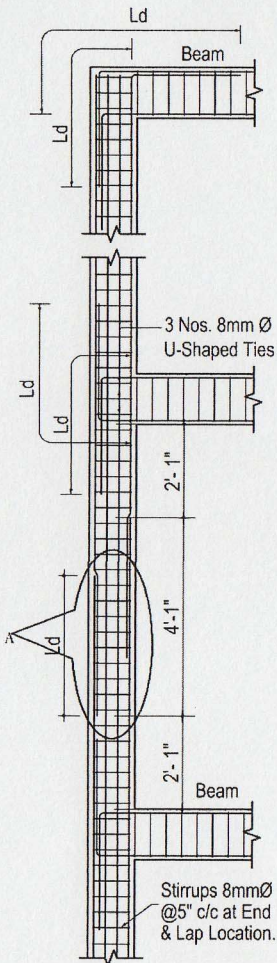
SCALE: As Given

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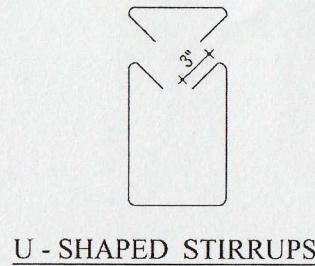
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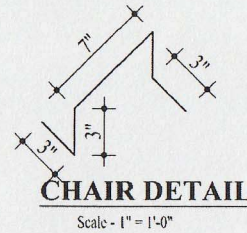
DETAIL AT A
Scale - 1" = 2'-0"



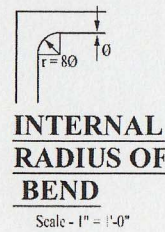
VERTICAL SECTION OF COLUMN
Scale - 1" = 4'-0"



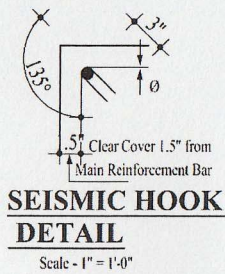
U - SHAPED STIRRUPS
Scale - 1" = 1'-0"



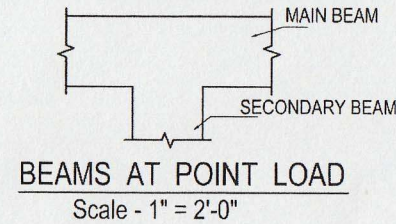
CHAIR DETAIL
Scale - 1" = 1'-0"



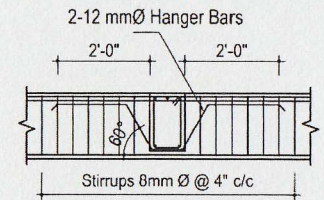
INTERNAL RADIUS OF BEND
Scale - 1" = 1'-0"



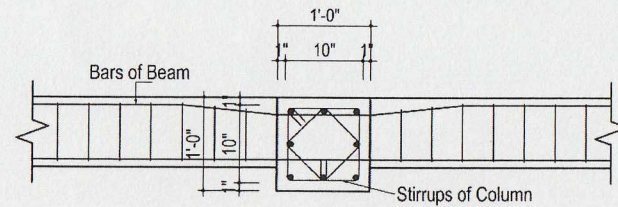
SEISMIC HOOK DETAIL
Scale - 1" = 1'-0"



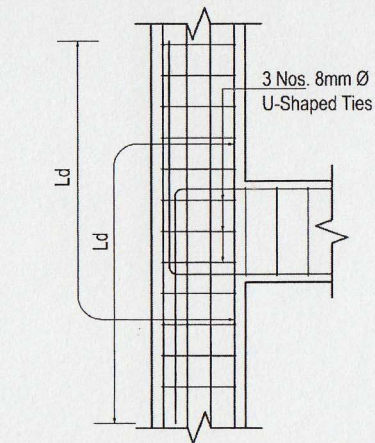
BEAMS AT POINT LOAD
Scale - 1" = 2'-0"



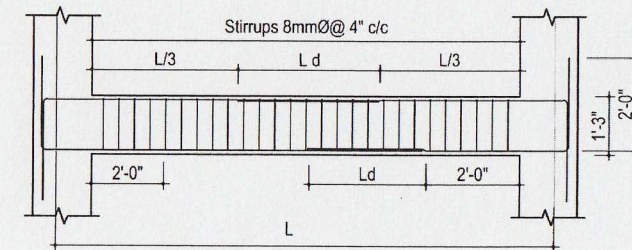
SECTION OF BEAM AT POINT LOAD
Scale - 1" = 4'-0"



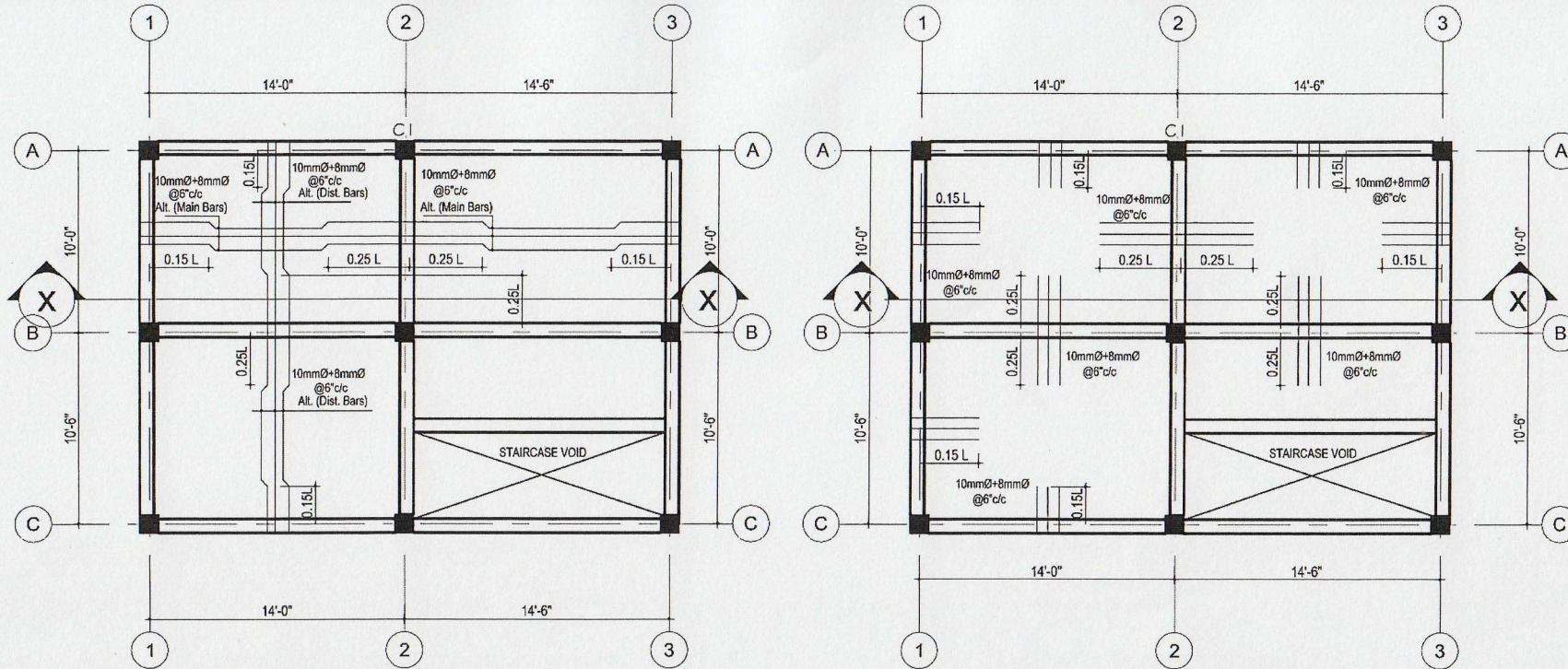
BEAM AND COLUMN JOINT
Scale - 1" = 2'-0"



ANCHORAGE OF BEAM BARS IN AN EXTERNAL JOINT
Scale - 1" = 2'-0"



LAP DETAILS OF BEAM
Scale - 1" = 4'-0"

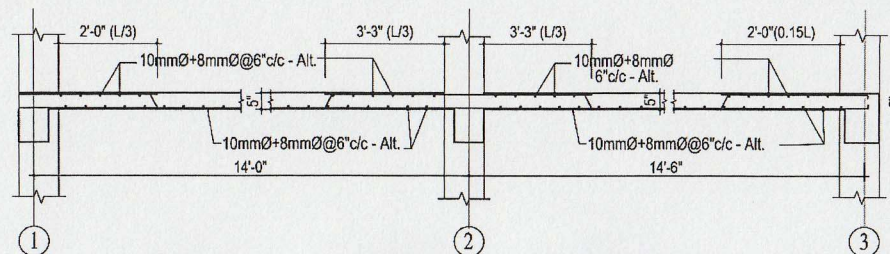


BOTTOM REINFORCEMENT PLAN OF SLAB

Scale - 1" = 8'-0"

TOP REINFORCEMENT PLAN OF SLAB

Scale - 1" = 8'-0"



CROSS SECTION OF SLAB

Scale - 1" = 4'-0"

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Central Level Project Implementation Unit
Bansbaraha, Kathmandu

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TYPE OF HOUSE: MODEL RCC

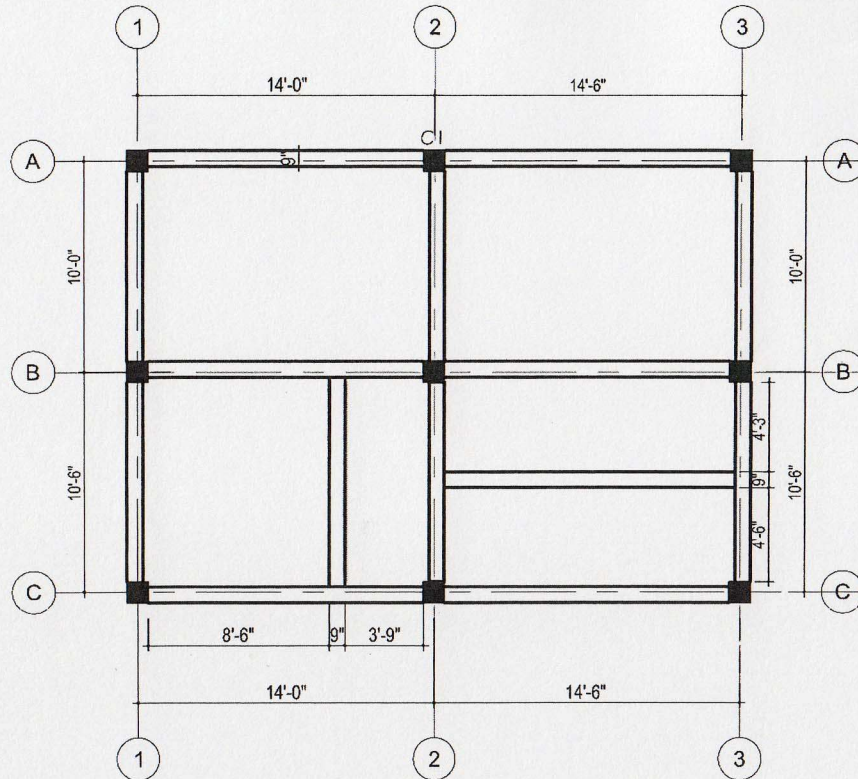
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SCALE: As Given

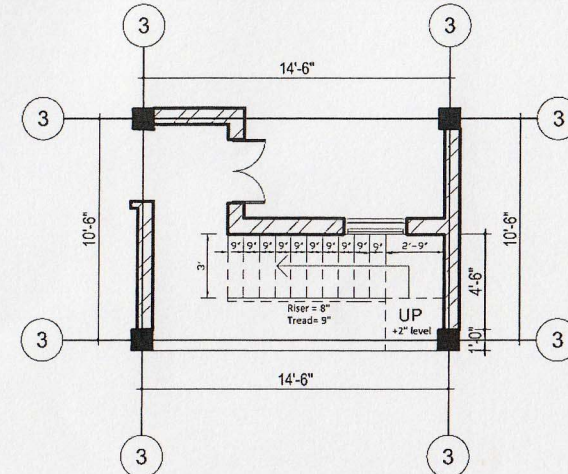
DATE: Aashraya

DESIGNED BY: Aashraya Nepal

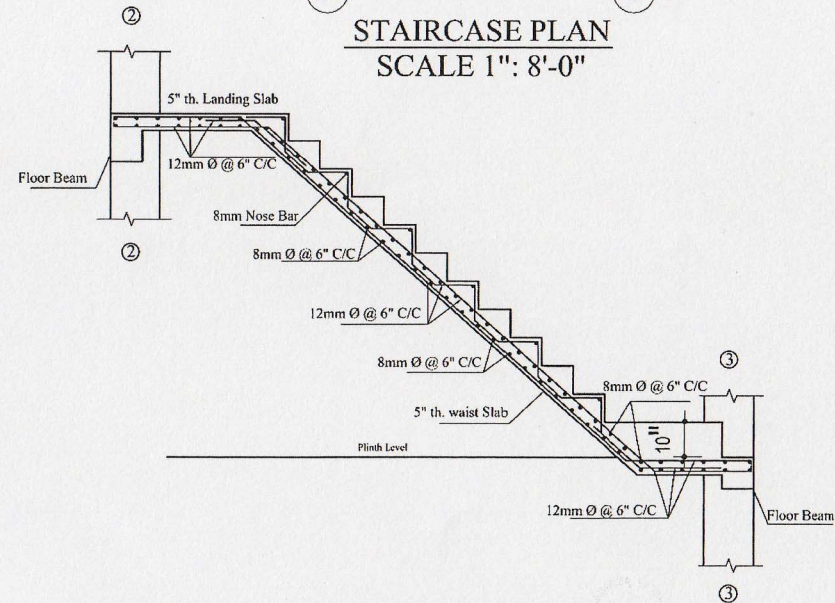
RCC
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10/13



BEAM LAYOUT PLAN PLINTH AND FIRST FLOOR
Scale- 1"=8'-0"



STAIRCASE PLAN
SCALE 1" : 8'-0"



STAIRCASE REINFORCEMENT DETAIL
SCALE 1" : 4'-0"

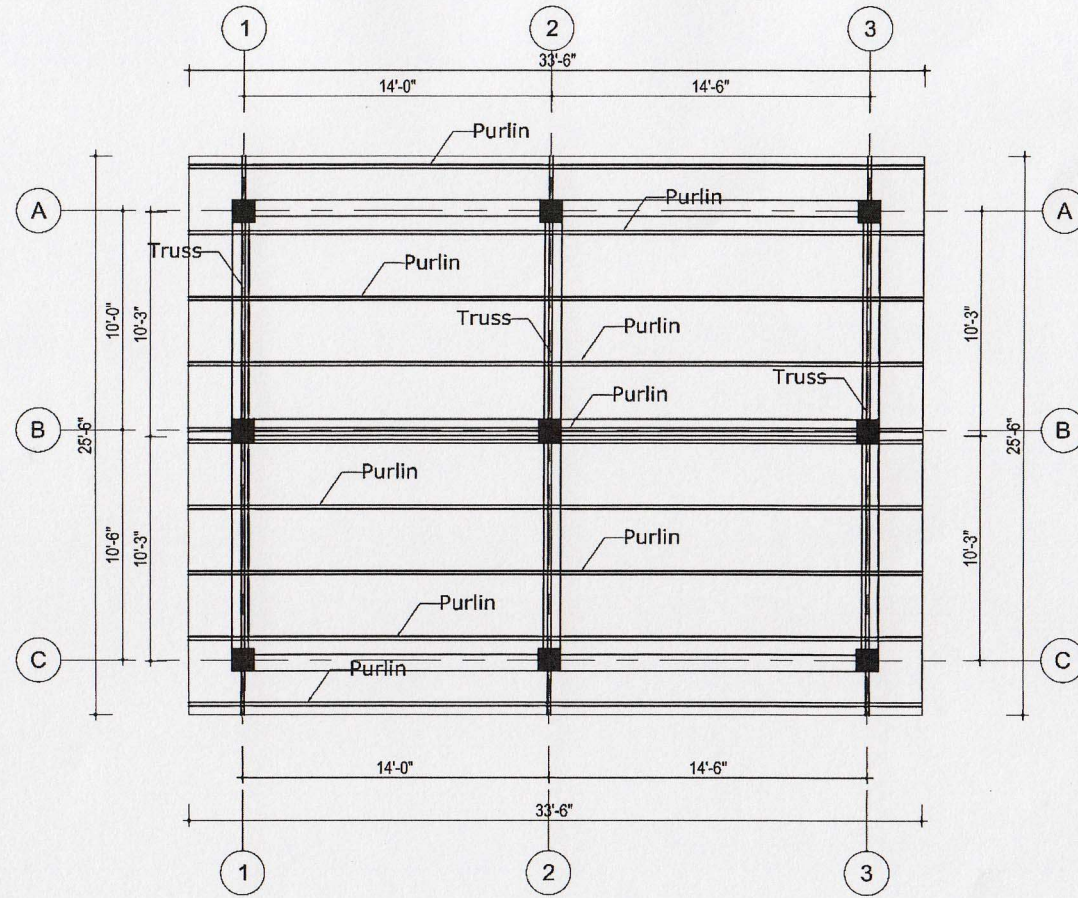
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TYPE OF HOUSE: MODEL RCC
DRAWING TITLE: STRUCTURAL DETAILS

SCALE: As Given
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DATE: *[Signature]*
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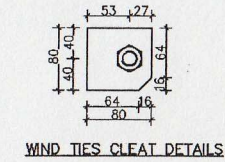
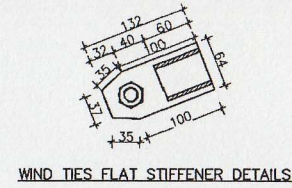
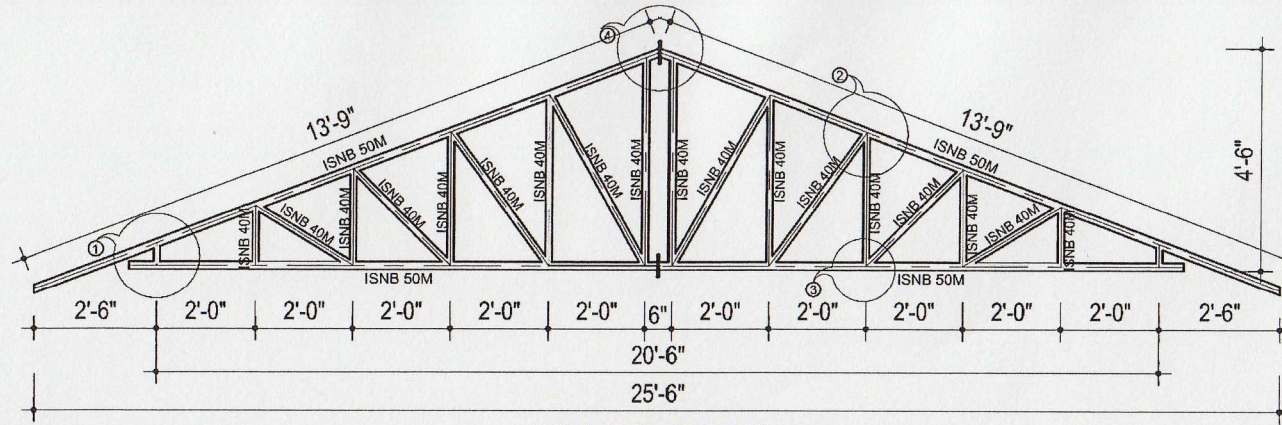
TRUSS PLACEMENT DETAIL
SCALE 1"=8'



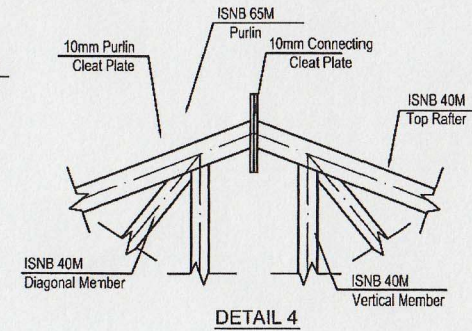
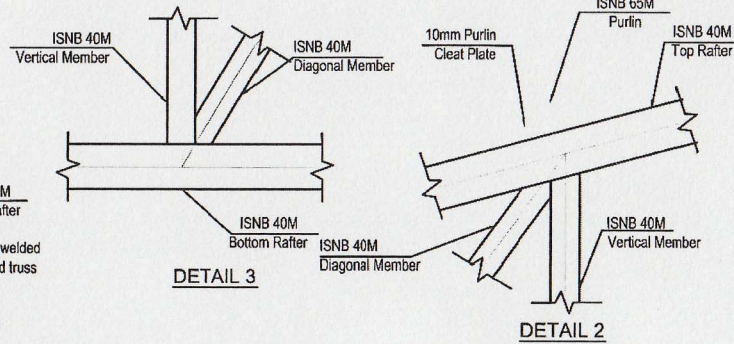
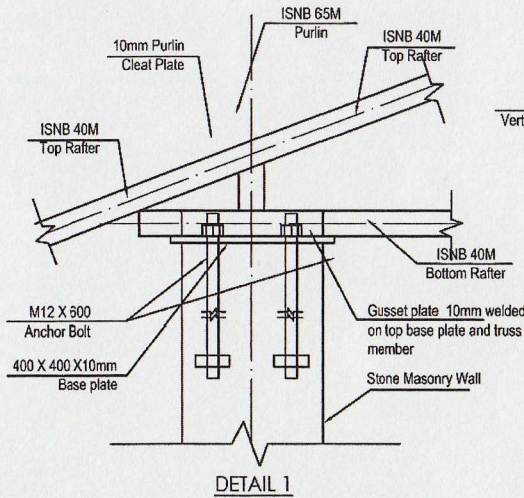
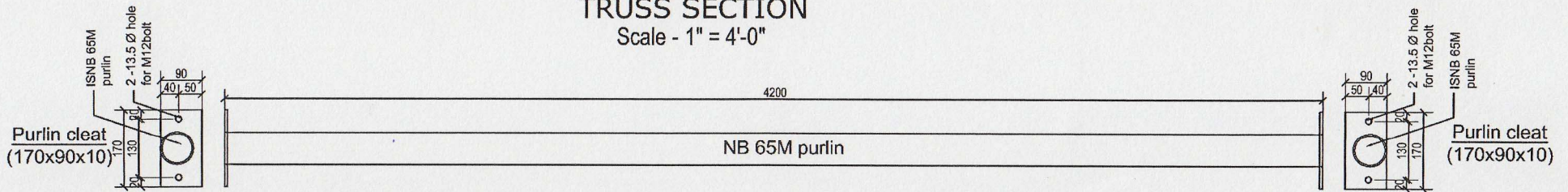
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	TYPE OF HOUSE: MODEL RCC	SCALE: As Given	DATE: <i>[Handwritten date]</i>	
	DRAWING TITLE: STRUCTURAL DETAILS	DESIGNED BY: Aashraya Nepal		



TRUSS SECTION
Scale - 1" = 4'-0"



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TYPE OF HOUSE: MODEL RCC

DRAWING TITLE: STRUCTURAL DETAILS

SCALE: As Given

DESIGNED BY: Aashraya Nepal

DATE: *Aashraya*

RCC
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Aashraya Team

Ar. Kumar Yonjan

Ar. Rakesh Maharjan

Ar. Resma Shrestha

Ar. Prajjwal Pathak

Ar. Prashant Sharma

Ar. Sudip Adhikari

Er. Sudip KC (Str. Engineer)

Hyolmo Foundation/HEAL Nepal

General Secretary/Director

Tashi D. Hyolmo

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