Nepal Housing Reconstruction Programme

MODEL HOLLOW CONCRETE BLOCK BUILDING DESIGN

MercyCorps
Be the change

Submitted By

BUILD CHANGE

September, 2016

FRONT ELEVATION

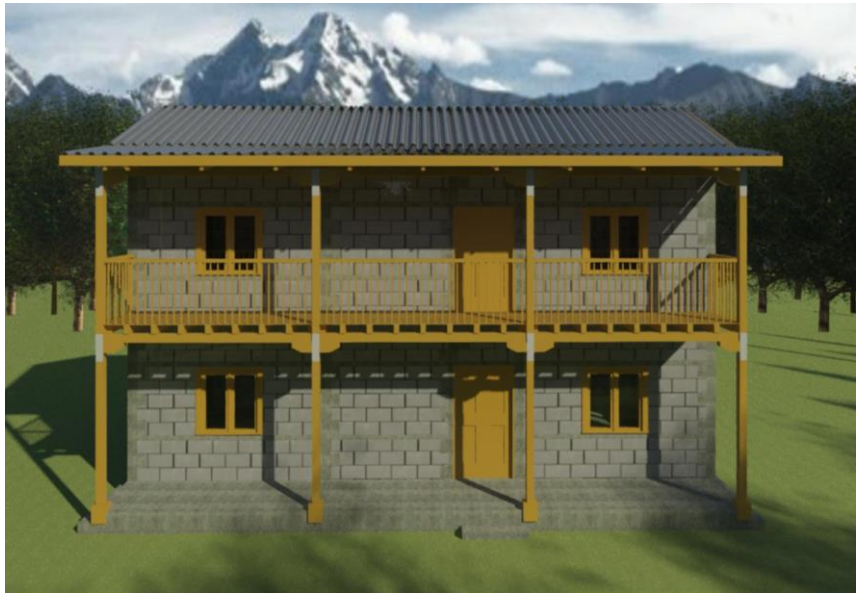
RIGHT SIDE ELEVATION

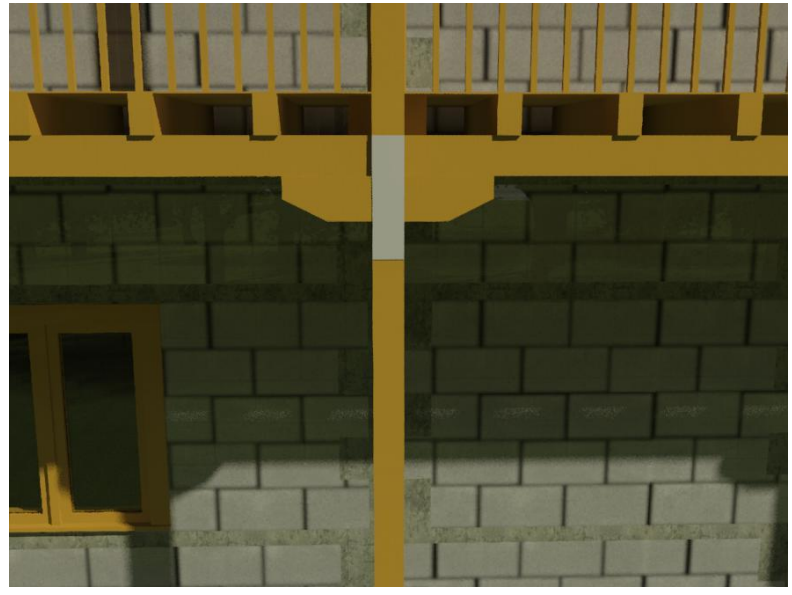
LEFT SIDE ELEVATION

BACK ELEVATION

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: 1:50	DATE AUG 15, 2016	1
	DRAWING TITLE: **ELEVATIONS**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK **DOUBLE-STORY**





Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: 1:50	DATE JAN 5, 2016	2
	DRAWING TITLE: **3 DIMENTIONAL VIEWS**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK **DOUBLE-STORY**

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: 1:50	DATE AUG 15, 2016	3
	DRAWING TITLE: **3 DIMENTIONAL VIEWS**	DESIGNED BY: **BUILD CHANGE**		

GENERAL NOTES

GENERAL NOTES

I. GENERAL

A. THE DESIGN OF THIS HOUSE IS BASED ON THE REQUIREMENTS OF NEPAL NATIONAL BUILDING CODE AND INDIAN STANDARD CODES.

B. THE BUILDER IS RESPONSIBLE FOR COORDINATING THE WORK OF ALL WORKERS AND FOR CHECKING DIMENSIONS. NOTIFY THE ENGINEER OF ANY DISCREPANCIES AND RESOLVE BEFORE PROCEEDING WITH THE WORK.

C. THE BUILDER SHALL PROVIDE MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES INCLUDE, BUT MAY NOT BE LIMITED TO, BRACING AND SHORING FOR LOADS DURING CONSTRUCTION.

D. THE BUILDER AND HOMEOWNER SHALL REPORT TO THE ENGINEER ANY CONDITIONS ON SITE THAT CONFLICT WITH THE DRAWINGS.

E. THE BUILDER SHALL ASSURE THAT SITE SAFETY IS RESPECTED TO PREVENT INJURY OF PERSONS ON SITE OR ANY DAMAGE.

II. FOUNDATIONS

A. SITE PREPARATION AND FOUNDATION WORK SHALL CONFORM TO THE FOLLOWING:

1. CLEAR THE SITE OF ORGANIC MATERIAL PRIOR TO LEVELING THE SOIL.
2. NO ROCK OR SIMILAR IRREDUCIBLE MATERIAL WITH A MAXIMUM DIMENSION GREATER THAN 20CM SHALL BE PLACED IN FILLS.
3. ALL FILLS SHALL BE COMPACTED IN LIFTS NOT EXCEEDING 20CM IN THICKNESS TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY.
4. LAYOUT THE FOUNDATION GEOMETRY AND LOCATION USING NYLON STRING AND STAKES.

B. FOUNDATION TRENCHES SHALL BE CONSTRUCTED WITH THE FOLLOWING REQUIREMENTS:

C. MARK THE FOUNDATION TRENCH LOCATIONS WITH CHALK OR STRING LINE ACCORDING TO THE DIMENSIONS SHOWN ON PLAN. LINES SHALL BE AT RIGHT ANGLES.

1. TRENCHES SHALL BE FREE FROM ORGANIC MATTER.
2. THE BOTTOM OF THE TRENCH MUST BE LEVEL, CLEAN AND FREE OF LOOSE SOIL.

D. LOCATE AND PROTECT EXISTING UTILITIES TO REMAIN DURING AND/OR AFTER CONSTRUCTION.

E. REMOVE ABANDONED FOOTINGS, UTILITIES, ETC. WHICH INTERFERE WITH NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED.

F. NOTIFY THE ENGINEER IF ANY BURIED STRUCTURES NOT INDICATED, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC., ARE FOUND.

G. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, UNDERPINNING AND PROTECTION OF EXISTING CONSTRUCTION.

H. REMOVE LOOSE SOIL AND STANDING WATER FROM FOUNDATION EXCAVATIONS PRIOR TO PLACING CONCRETE.

III. FORMWORK

A. FORMWORK SHALL BE OF GOOD QUALITY, STRAIGHT AND UNWARPED.

B. FORMWORK BELOW SLABS SHALL CONSIST OF ¾" PLYWOOD MINIMUM. THE PANELS SHALL BE SUPPORTED BELOW BY 2X4 WOOD BEAMS SPACED AT 1 METER MAXIMUM. SUPPORT EACH WOOD BEAM WITH METAL POSTS, 2X4 WOOD POSTS OR 6CM MINIMUM DIAMETER WOOD LOGS AT 1 METER MAXIMUM SPACING. PROVIDE SHIMS AT THE POST BASES AS REQUIRED FOR STABILITY.

C. FORMS SHALL BE SUBSTANTIAL AND SUFFICIENTLY TIGHT TO PREVENT LEAKAGE OF CEMENT PASTE.

D. FORMS SHALL BE PROPERLY BRACED OR TIED TOGETHER TO MAINTAIN POSITION AND SHAPE.

E. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.

F. INSTALL FORMWORK AT THE VERTICAL TIES AFTER THE WALL CONSTRUCTION IS COMPLETE AND USE A LEVEL TO CHECK THAT THE FORMWORK IS INSTALLED PLUMB.

G. CONDUITS, PIPES AND SLEEVES PASSING THROUGH A SLAB, WALL OR BEAM SHALL NOT IMPAIR SIGNIFICANTLY THE STRENGTH OF THE CONSTRUCTION. THEY SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN ONE THIRD THE OVERALL THICKNESS OF SLAB, WALL OR BEAM IN WHICH THEY ARE EMBEDDED.

H. USE BRACES AS REQUIRED TO MAINTAIN ALL FORMWORK FIRMLY IN THE CORRECT POSITION.

I. DO NOT REMOVE FORM WORK AND SUPPORTS SOONER THAN THE TIMES INDICATED BELOW AFTER CASTING THE CONCRETE:

1. VERTICAL TIES AND HORIZONTAL RING BEAMS DIRECTLY SUPPORTED ON WALLS: 24 HOURS

2. FOUNDATIONS: TWO DAYS

3. SUSPENDED SLABS AND BEAMS NOT DIRECTLY SUPPORTED ON WALLS: FOURTEEN DAYS

J. REPAIR ALL VOIDS IN CONCRETE WITHIN (3) DAYS AFTER FORMS ARE REMOVED AS FOLLOWS:

1. IMMEDIATELY NOTIFY THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PROCEEDING WITH A REPAIR.

2. VOIDS THAT LEAVE REINFORCING STEEL EXPOSED - CHIP OUT ENTIRE STRUCTURAL ELEMENT. RE-POUR CONCRETE SO THAT NO VOIDS ARE FORMED.

3. SMALL VOIDS WITH NO REINFORCING STEEL EXPOSED - FILL VOIDS WITH CEMENT RICH MORTAR.

IV. REINFORCING STEEL

A. REINFORCEMENT SHALL BE DEFORMED REINFORCEMENT.

B. REINFORCING TO HAVE A MINIMUM STRENGTH OF 415 MPa.

C. BARS INDICATED IN THE DRAWINGS SHALL CONFORM TO THE FOLLOWING MINIMUM DIMENSIONS:

DESIGNATION	DIAMETER	LAP LENGTH
∅8MM	8.0MM	300MM
∅10MM	10.0MM	400MM
∅12MM	12.0MM	500MM
∅16MM	16.0MM	650MM

D. STEEL SHALL BE RUST FREE. CONCRETE FROM PREVIOUS POURS SHALL BE REMOVED WITH A WIRE BRUSH PRIOR TO POURING CONCRETE.

E. TERMINATE REINFORCING STEEL IN STANDARD HOOKS, UNLESS OTHERWISE SHOWN.

F. PROVIDE REINFORCING SHOWN OR NOTED CONTINUOUS IN LENGTHS AS LONG AS PRACTICABLE.

G. PROVIDE MEASURES NECESSARY TO STABLIZE REINFORCING ASSEMBLIES PRIOR TO PLACING CONCRETE.

V. CAST-IN-PLACE CONCRETE, MORTAR AND CEMENT PLASTER

A. THE DESIGN IS BASED ON CONCRETE COMPRESSIVE STRENGTH, f'C, AT 28 DAYS TO BE 20 MPa (M20), MINIMUM FOR ALL STRUCTURAL MEMBERS. THE PLAIN CEMENT CONCRETE (PCC) ABOVE THE SOLING AT THE GROUND FLOOR WILL HAVE f'C, AT 28 DAYS TO BE 15 MPa (M15), MINIMUM

B. CEMENT: PORTLAND CEMENT, TYPE 1, DRY AND UNOPENED BAGS.

C. SAND: BLACK SAND, CLEAN AND WASHED. FINE FOR CEMENT PLASTER AND MORTAR, COARSE FOR CONCRETE.

D. AGGREGATE: CRUSHED, ANGULAR GRAVEL LESS THAN 2CM IN SIZE FOR CONCRETE.

E. WATER: CLEAN, NOT SALTY OR MUDDY

GENERAL NOTES

F. CONCRETE SPACERS SHALL BE PLACED AT 0.8M ON CENTER MAXIMUM AND SECURED WITH BINDING WIRE TO THE REINFORCING BARS PRIOR TO PLACING CONCRETE IN ACCORDANCE WITH THE FOLLOWING, UNLESS OTHERWISE NOTED IN THE DRAWINGS:

DESIGNATION	SPACER LENGTH
BELOW AND AT SIDES OF FOUNDATION REINFORCEMENT	75 MM
SIDES OF COLUMNS	25 MM
BETWEEN TIE REINFORCING AND MASONRY WALLS	25 MM
SIDES OF BEAM AND BELOW SLAB REINFORCING	20 MM

G. MIX DESIGN PROPORTIONS SHALL BE AS FOLLOWS:

USE	CEMENT	SAND	AGGREGATE
M15 CONCRETE	1	2	4
M20 CONCRETE	1	1.5	3
MORTAR	1	5	
GROUT	1	5	
PLASTER	1	5	

H. PROPORTION, MIX, TRANSPORT AND PLACE CAST-IN-PLACE CONCRETE AS NOTED BELOW:
1. MIX ON A CLEAN CONCRETE OR ASPHALT SURAFCE, NOT ON SOIL.
2. MIX DRY UNTIL MATERIALS REACH A CONSISTENT COLOR, THEN ADD WATER.
3. ADD WATER ONLY AS NEEDED TO REACH DESIRED CONSISTENTCY, NOT EXCEEING THE AMOUNT NOTED IN THE MIX DESIGN PROPORTIONS BELOW.
4. CONSISTENCY SHALL RESULT IN SLUMP OF 5CM TO 10CM, OR A HAND TEST THAT RESULTS IN NO WATER SPILLING OUT WHEN CONCRETE IS HELD TIGHTLY IN THE HAND, BUT THE CONCRETE DOES NOT HOLD ITS FORM WHEN RELEASED.

I. AT LOCATIONS WHERE BLOCKS OR NEW CONCRETE WILL BE PLACED ABOVE CONCRETE, SCRAPE THE SURFACE AT ALL INTERFACES AFTER CASTING TO CREATE A ROUGHENED SURFACE.

J. AT LOCATIONS WHERE CONCRETE IS CAST OR CEMENT PLASTER APPLIED AGAINST MASONRY, WET SURFACES PRIOR TO PLACEMENT AND CLEAN OF LAITANCE, FOREIGN MATTER, AND LOOSE PARTICLES WITH A WIRE BRUSH OR BY CHIPPING.

K. WET FORMWORK AND STEEL PRIOR TO PLACING CONCRETE.

L. PLACE CONCRETE WITHIN 60 MINUTES AFTER MIXING. WITH THE EXCEPTION OF COLUMNS WHICH CAN HAVE COLD JOINTS AT THE SILL AND LINTEL BEAM LEVEL, PLACE AN ENTIRE ELEMENT (I.E. BEAM) WITHIN ONE DAY.

M. USE A VIBRATOR OR HAMMER AND ROD TO CONSOLIDATE CONCRETE AROUND REINFORCING.

N. AFTER REMOVING FORMS, CURE THE CONCRETE BY WETTING FIVE TIMES PER DAY FOR THREE DAYS MINIMUM.

O. CHIP OUT CONCRETE FOR THE ENTIRE ELEMENT AND REPOUR ALL CONCRETE ELEMENTS THAT CONTAIN ANY OF THE FOLLOWING: EXPOSED STEEL REINFORCING, CRACKS LARGER THAN 3MM, NUMEROUS CRACKS IN A LOCALIZED AREA, OR DIAGONAL OR VERTICAL CRACKS IN A BEAM.

VI. CONCRETE MASONRY

A. THE PURCHASE OF GOOD QUALITY BLOCKS IS THE HOMEOWNERS RESPONSIBILITY. PRIOR TO THE PURCHASE OF CONCRETE HOLLOW BLOCKS, THE HOMEOWNER SHALL CONFIRM VIA TESTING, THE QUALITY OF THE BLOCKS MADE BY THE PROPOSED PRODUCER WHO WILL SUPPLY BLOCKS FOR THE HOUSE CONSTRUCTION. IN CASE PROPER TESTING FACILITIES ARE UNAVAILABLE, HOMEOWNER WILL CONDUCT A DROP TEST TO CONFIRM QUALITY OF BLOCKS.

B. THE DESIGNS ARE BASED ON BLOCKS WITH A MINIMUM GROSS COMPRESSION STRENGTH OF 5 MPa AND OVERALL DIMENSIONS OF 15MM x20MMx40MM AND WITH TWO CELLS.

C. IT IS RECOMMENDED TO PROVIDE CEMENT PLASTER FINISH TO ALL MASONRY WALLS. PLASTER TO BE AT LEAST 15MM THICK AND APPLIED AT EACH SIDE OF THE WALL, UNLESS OTHERWISE NOTED

D. THE VERTICAL AND HORIZONTAL JOINT THICKNESS SHALL BE BETWEEN 10MM MINIMUM AND 20MM MAXIMUM.

E. USE A MINIMUM OF 1/2 BLOCK LENGTH BONDING.

F. MORTAR AND GROUT: FIRST MIX SAND AND CEMENT AND THEN ADD WATER. USE WITHIN 30 MINUTES OF MIXING OR DISCARD.

G. WET BLOCKS WITH CLEAN WATER PRIOR TO PLACING.

H. DO NOT USE DAMAGED BLOCKS. IF USING PARTIAL BLOCKS, USE AT LEAST 1/2 OF BLOCK.

J. PLACE BLOCKS SO THAT THE UPPER FACE IS LEVEL BEFORE PLACING MORTAR OR GROUT.

K. WHERE BARS ARE PLACED WITHIN THE BLOCKS :
1. CENTER THE VERTICAL REINFORCING IN THE WALL, UNLESS OTHERWISE NOTED.
2. VERTICALLY ALIGN THE BLOCK CELLS.
3. FILL ALL CELLS WITH GROUT
4. CLEAN THE CELLS OF MORTAR AND DEBRIS PRIOR TO PLACING THE GROUT.
5. BARS IN THE FOUNDATION SHOULD CORRESPOND WITH THE SIZE AND LOCATIONS OF THE WALL REINFORCING WITHIN THE BLOCKS.

L. CURE THE WALL BY LIGHTLY WETTING 3 TIMES PER DAY FOR 3 DAYS.

M. THE CONFIGURATION AND DISTANCE BETWEEN WALLS SHOULD BE MODIFIED TO INCORPORATE THE MODULAR DESIGN BASED ON THE SIZE OF THE CONCRETE HOLLOW BLOCKS

N. THE CONCRETING OF THE TIE COLUMNS AT EACH FLOOR HEIGHT TO BE DONE IN THREE PHASES AFTER THE MASONRY WALL IS COMPLETE TO THAT LEVEL:
1. FROM FLOOR TO SILL LEVEL
2. FROM SILL LEVEL TO LINTEL LEVEL
3. FROM LINTEL LEVEL TO THE NEXT FLOOR LEVEL

THE BEAM AT THAT LEVEL IS TO BE CONCRETED MONOLITHIC TO THE CONCRETING OF THE TIE COLUMNS

VII. CARPENTRY

A. STRUCTURAL WOOD FRAMING: KOTTE SALLA WOOD OR APPROVED EQUAL.

B. PRESERVATIVE OR MOISTURE BARRIERS SHALL BE USED ON ALL WOODEN MEMBERS PLACED AGAINST CONCRETE SURFACES. ALL WOOD STRUCTURAL MEMBERS THAT ARE DIRECTLY EXPOSED OR OPEN TO WEATHER, LIKE RAIN, WIND, AND SUN, SHOULD BE PROTECTED BY EITHER PAINTING OR VARNISHING THE EXPOSED SURFACES.

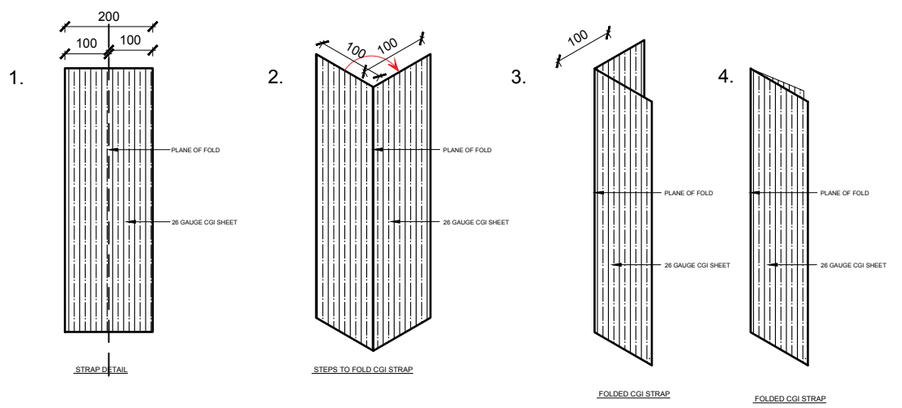
C. KNOTS IN WOOD MEMBER ARE NOT RECOMMENDED FOR USE.

D. THE PLACEMENT OF THE NAILS SHALL COMPLY WITH THE RELEVANT STANDARDS.

E. WOOD WITH THE FOLLOWING SHALL NOT BE USED IN CONSTRUCTION
a. WITH BARKS AND WANE.
b. WITH SHAKES, CHECKS AND SPLITS.
c. WITH SAPSTAIN AND DECAY.
d. WOOD WHICH HAVE UNDERGONE WRAPPING AND SWELLING:

1. NAILS: COMMON WIRE (SHOULD CONFORM TO RELEVANT NEPAL/INDIAN STANDARDS):
a. LENGTH AT WOOD-TO-WOOD CONNECTION: 3.5”
ROOFING NAILS WITH 1cm DIA. HEADS:
a. LENGTH AT METAL DECK-TO-WOOD CONNECTION: 2.5"

2. METAL STRAPS: 26 GAGE OR THICKER GALVANIZED IN TWO LAYERS, EMBED STRAPS IN RING BEAM OR COLUMN, PASSING THE STRAP AROUND THE REINFORCING STIRRUP OR BAR.



VIII. METAL ROOFING

A. THE METAL DECKING SHOULD BE AT LEAST 26 GAGE (0.48mm) OR THICKER AND GALVANIZED.

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: MODEL HOLLOW CONCRETE BLOCK	SCALE:	DATE: SEPT , 2016
	DRAWING TITLE: GENERAL NOTES	DESIGNED BY: BUILD CHANGE	G-02

VISUAL INSPECTION OF MASONRY BLOCKS
CONCRETE HOLLOW BLOCKS

RULE: IF BLOCK LOOKS SOFT AND IS FALLING APART, CONDUCT DROP TEST.

GOOD QUALITY BLOCKS

BREAKS EVEN DURING HANDLING AND STORING

DROP BLOCK FROM CHEST HEIGHT ON HARD SURFACE TO TEST BLOCK QUALITY. IF MORE THAN 1 OUT OF 5 BLOCKS BREAKS, THE BATCH OF BLOCKS IS PROBABLY NOT STRONG ENOUGH

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE SEPT2016	G-03
	DRAWING TITLE: **CONCRETE HOLLOW BLOCK QUALITY TEST**	DESIGNED BY: **BUILD CHANGE**		

Minimum requirements for Hollow Concrete Block Building Design

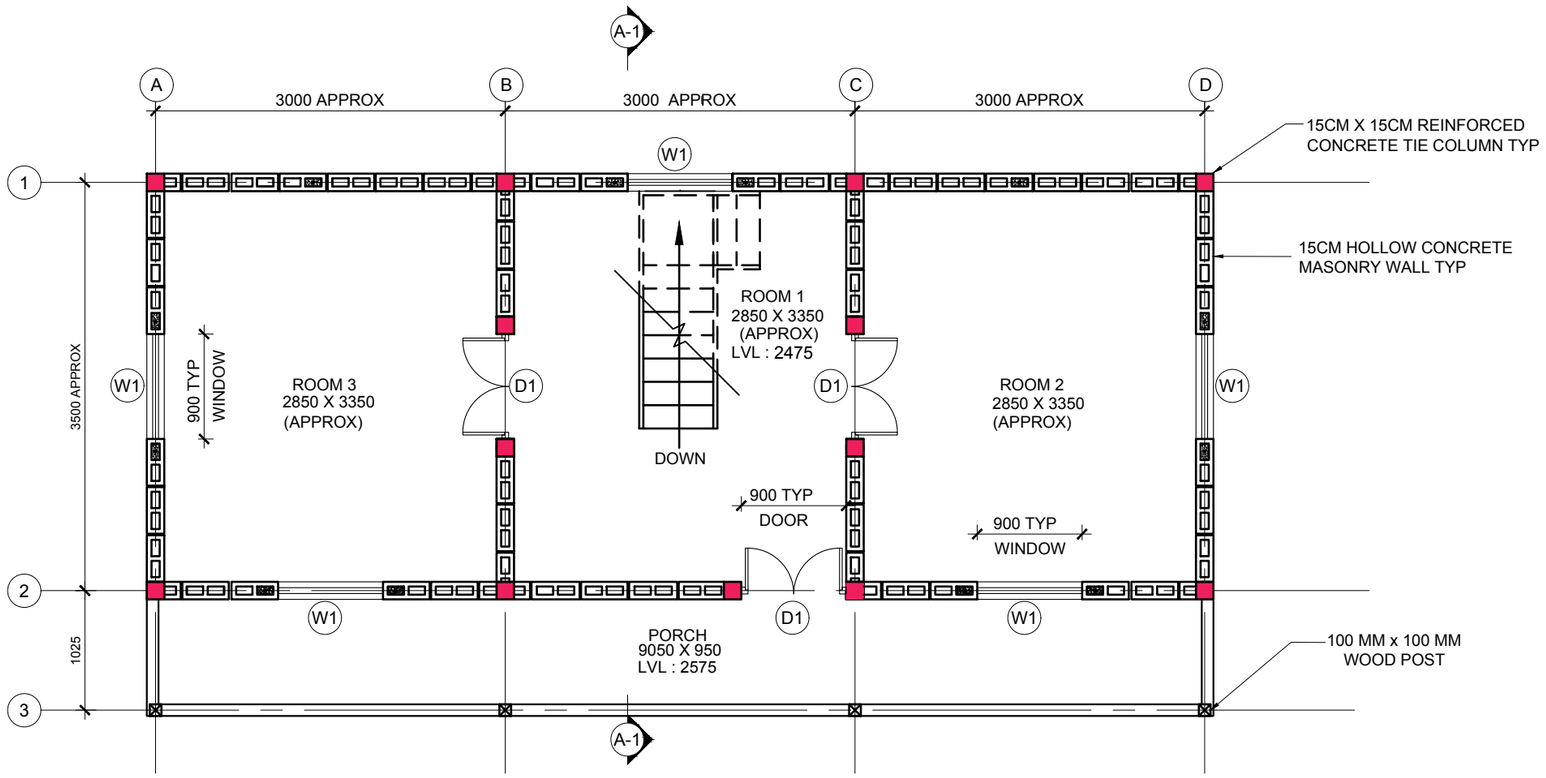
1	Site Selection	A building shall not be constructed if the site is:		
				Geological fault or Ruptured Area
				Area susceptible to landslide
				Steep slope > 20%
				Filled Area
				River bank ad water logged area
2	Shape of house	Maximum number of stories		Two
		Span of wall		Largest span of the room should not be more than 3.5 metres
		Height of wall		Maximum height of wall should not be more than 2.5 metres
		Proportion		The house shall be planned in square, rectangular. External length to width ratio of the building should not exceed 3
3	Foundation	General		The foundation trench shall be of uniform width. The foundation bed shall be on the same level throughout the foundation in the flat area
		Depth		The depth of footing should not be less than 900mm depending on the soil sub strata
		Width		The width of footing should not be less than 900 mm in medium soil condition.
4	Plinth	General		Provide a reinforced concrete band at plinth level, as shown in detail drawings. The plinth height should not be less than 300mm from existing ground level.
		Depth of beam		Depth of plinth beam shall be greater than or equal to 150mm
		Width of beam		Width of plinth beam shall be greater than or equal to 200mm
		Reinforcement		Main reinforcement should be 4-10mm dia. Bars. Use 7mm diameter rings at 150mm center to center. Hook length should be 50mm. Bars shall have a clear cover of 25mm concrete

5	Walls	General		Masonry should be laid staggered in order to avoid continuous vertical joints. The wall should have toothing at the wall-tiecolumn interface to facilitate good connection
		Hollow Block units Mortar joints and ratio		The hollow blocks used shall be of good quality and shall adhere to the Nepal Standards of block production Mortar joints should be between 20mm to 10mm in thickness. The mortar shall be 1: 5 (cement:sand) or richer
		Span of wall		The length of wall shall be less than or equal to 3.5 metres. The length of wall between vertical reinforcing members (tie column or vertical grouted reinforcement) shall be less than or equal to 1.5 metres.
		Width		The thickness of wall shall be greater than or equal to 150mm
6	Openings	Location		Openings are to be located away from inside corners by a clear distance of at least 600mm
		Total length		Total length of openings in a wall is not to exceed half of the length of the wall
		Distance		The horizontal distance between two openings shall not be less than 600mm
		Lintel level		The lintel level should be kept same for all doors and windows
7	Vertical Tie columns and reinforcements	Location		Tie columns should be placed at each corner and intersection of the walls as well as on either side of the door.
		Size		The size of the tie-column shall be equal to the width of the wall
		Spacing		The spacing of tie-column shall be less than or equal to 3.5 metres.
		Reinforcement		The minimum reinforcement to be used is 4-12mm dia. Longitudnal bars and 7mm dia. Stirrups at 150mm c/c
8	Vertical reinforcement grouted in blocks	Location		Vertical reinforcement in the blocks is placed on either side of the window
		Reinforcement		Minimum 12mm dia. Bar centred in the Hollow block cell and grouted with cement mortar

9	Horizontal band	General		Horizontal bands should be provided throughout the entire wall
		Sill band		A continuous sill band shall be provided throughout the entire wall at the bottom level of the openings. The minimum depth of the band shall be 75mm
		Lintel band		A continuous lintel band shall be provided throughout the entire wall at the top level of the openings. The minimum depth of the band shall be 75mm
		Floor/Roof band		A continuous floor/roof band shall be provided throughout the entire wall at the top of the walls at floor/roof level. The minimum depth of the band shall be 200mm. The minimum width of the band shall be 200mm.
		Reinforcement		Main reinforcement should be 4-10mm dia. Bars. Use 7mm diameter rings at 150mm. Hook length should be 50mm. Bars shall have a clear cover of 25mm concrete
10	Roof	Light roof		Use light roof comprising wooden or steel truss covered with CGI sheets
		Connection		All members of the timber truss or joints should be properly connected as shown in detail drawings
		Cross-tie		Trusses should be properly cross tiesd with wooden braces as shown in detail drawings
		Timber		Well seasoned Khote salla wood without knots should be used for roofing, timber treatment such as use of coal tar or any other preservative can prevent timber from being decayed and attacked by insects
11	Materials	Mortar		Cement sand mortar should not be leaner than 1:5 (cement:sand) for masonry and 1:6 for plaster
		Concrete		Concrete mix for seismic bands should not be leaner than 1:1.5:3 (cement:sand:aggregates)
		Reinforcement		High strength deformed bars - Fe415

12	Roof	Span		The center to center span of the truss shall not be greater than 3.5m
		Rafters		The size of the rafters shall be greater than 50mm x 100mm and shall be provided at a spacing of 1138mm or lesser
		Purlins		The size of the purlins shall be greater than 50mm x 50mm and shall be provided at a spacing of 350mm center to center at the porch and at a spacing of 500mm center to center at the roof

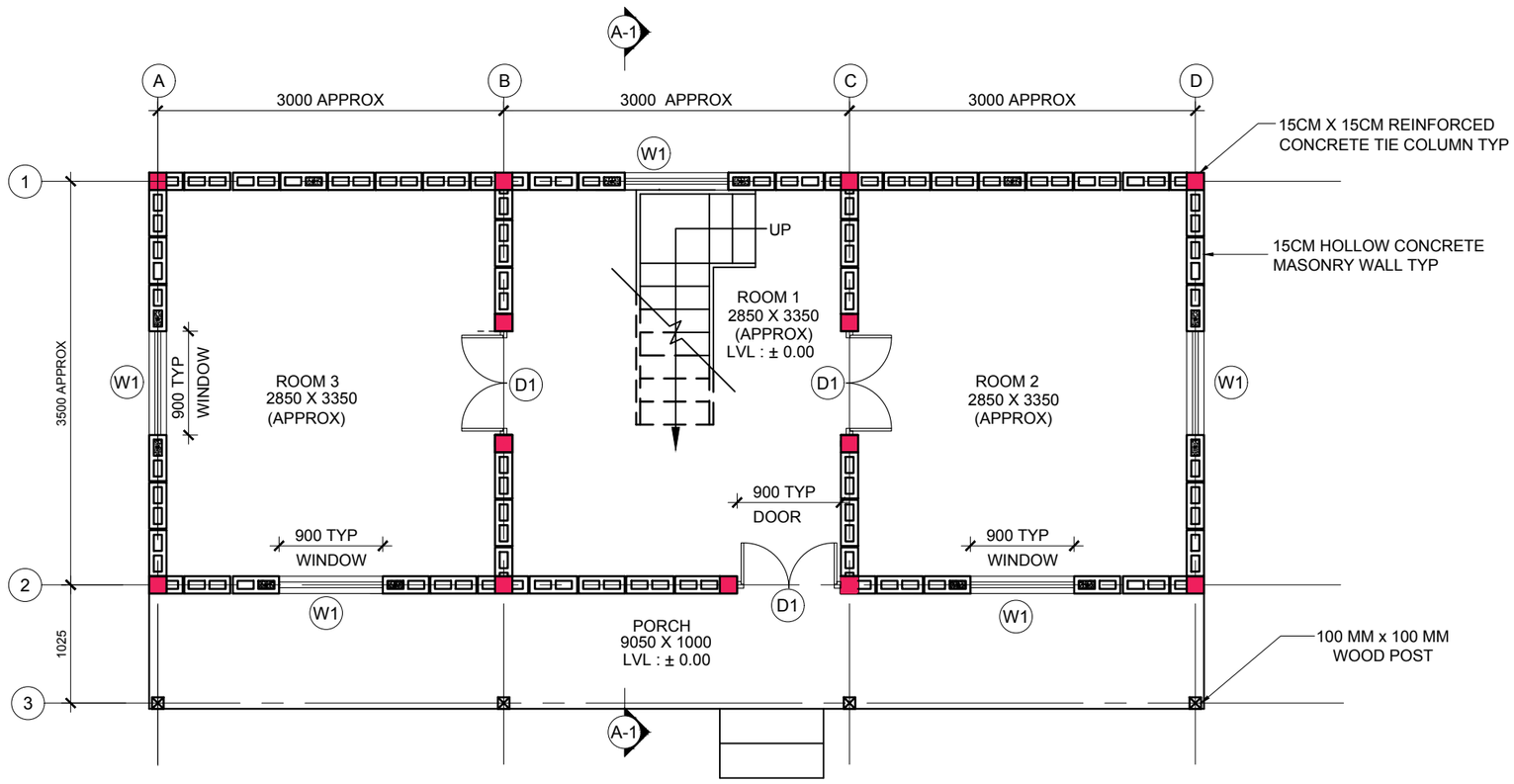
ARCHITECTURAL DRAWINGS



FIRST FLOOR PLAN

NOTE: THE LENGTHS PROVIDED HERE ARE APPROXIMATE. ACTUAL LENGTHS TO BE FINALIZED BASED ON BLOCK SIZE.

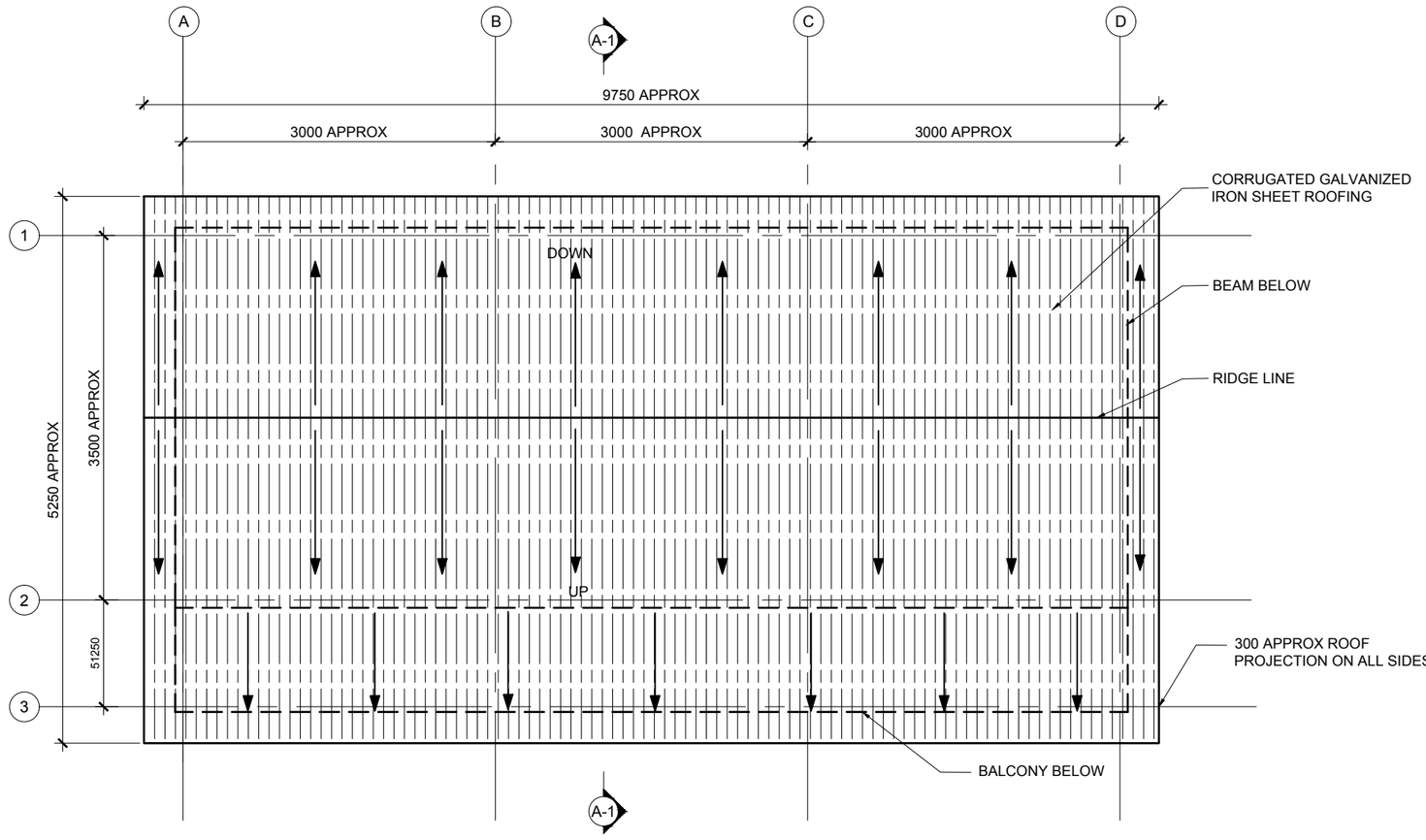
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	A-02
	DRAWING TITLE: **PLANS**	DESIGNED BY: **BUILD CHANGE**		



GROUND FLOOR PLAN

NOTE: THE LENGTHS PROVIDED HERE ARE APPROXIMATE. ACTUAL LENGTHS TO BE FINALIZED BASED ON BLOCK SIZE.

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	A-01
	DRAWING TITLE: **PLANS**	DESIGNED BY: **BUILD CHANGE**		



ROOF PLAN

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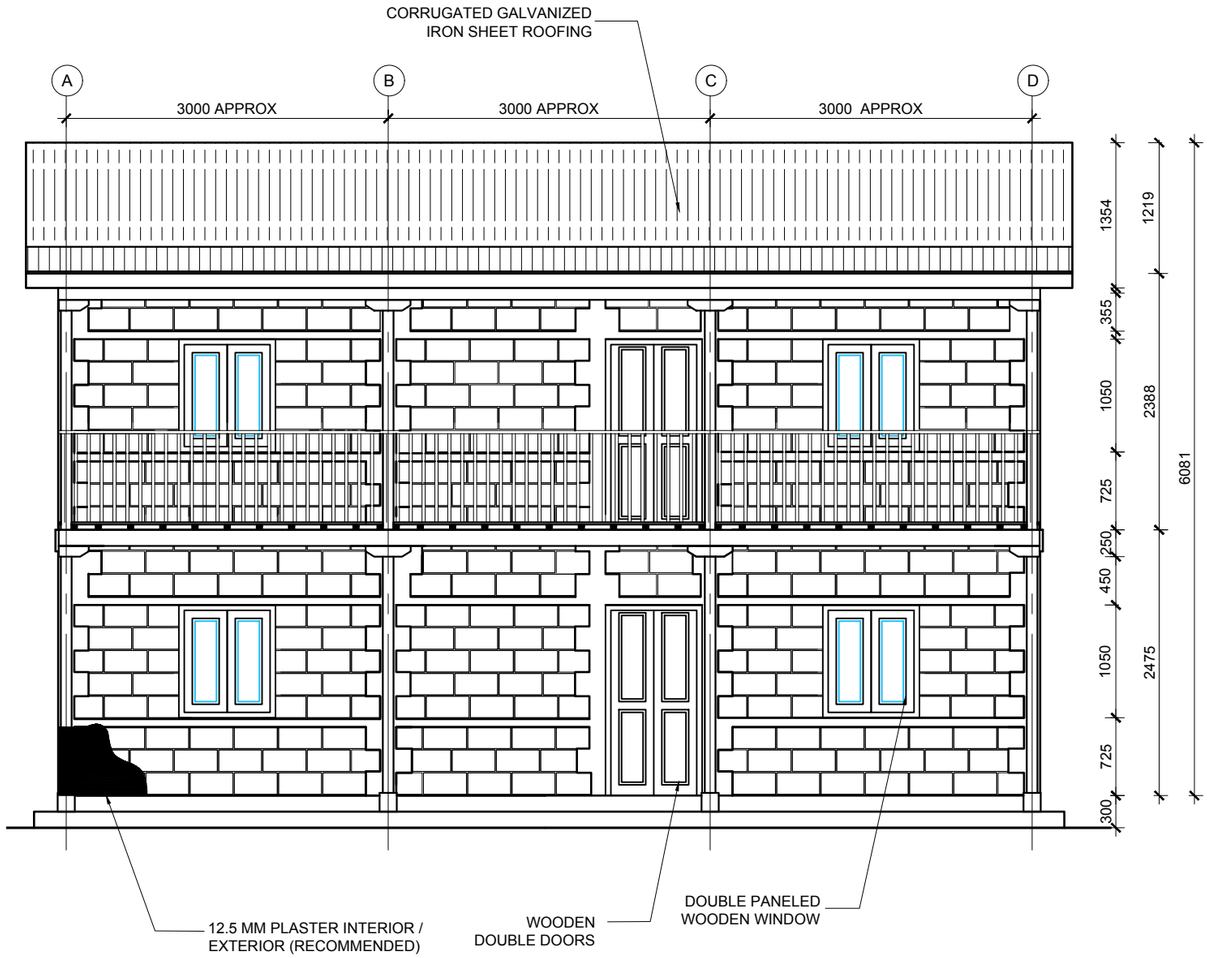
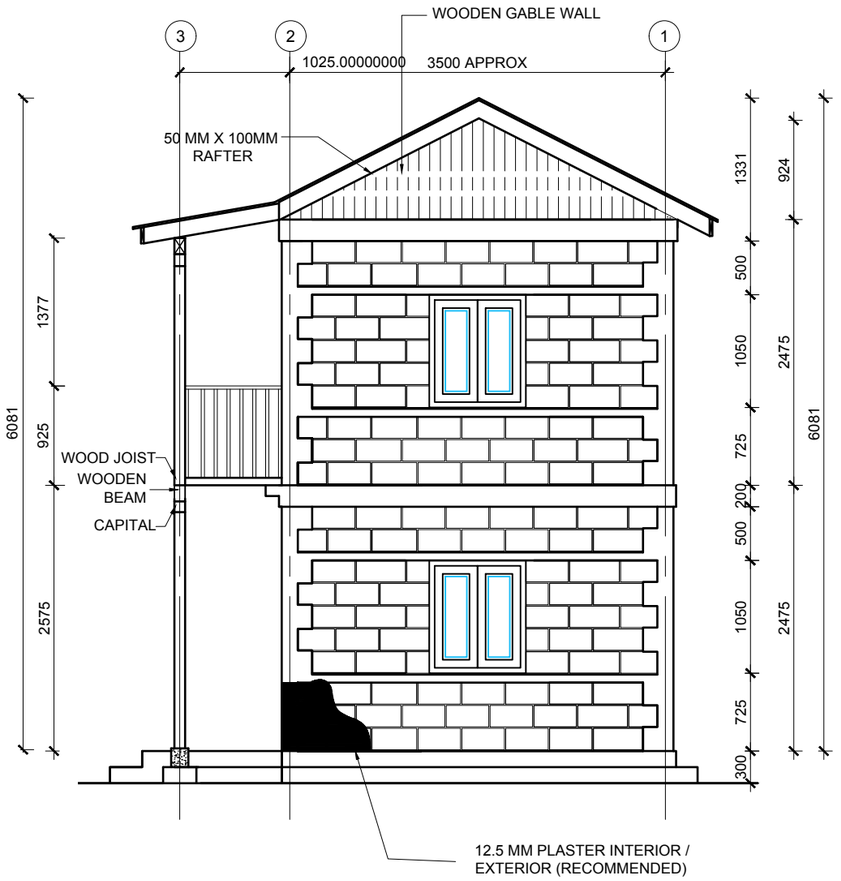
	DRAWING TITLE: **PLANS**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK

DOUBLE-STORY



FRONT ELEVATION

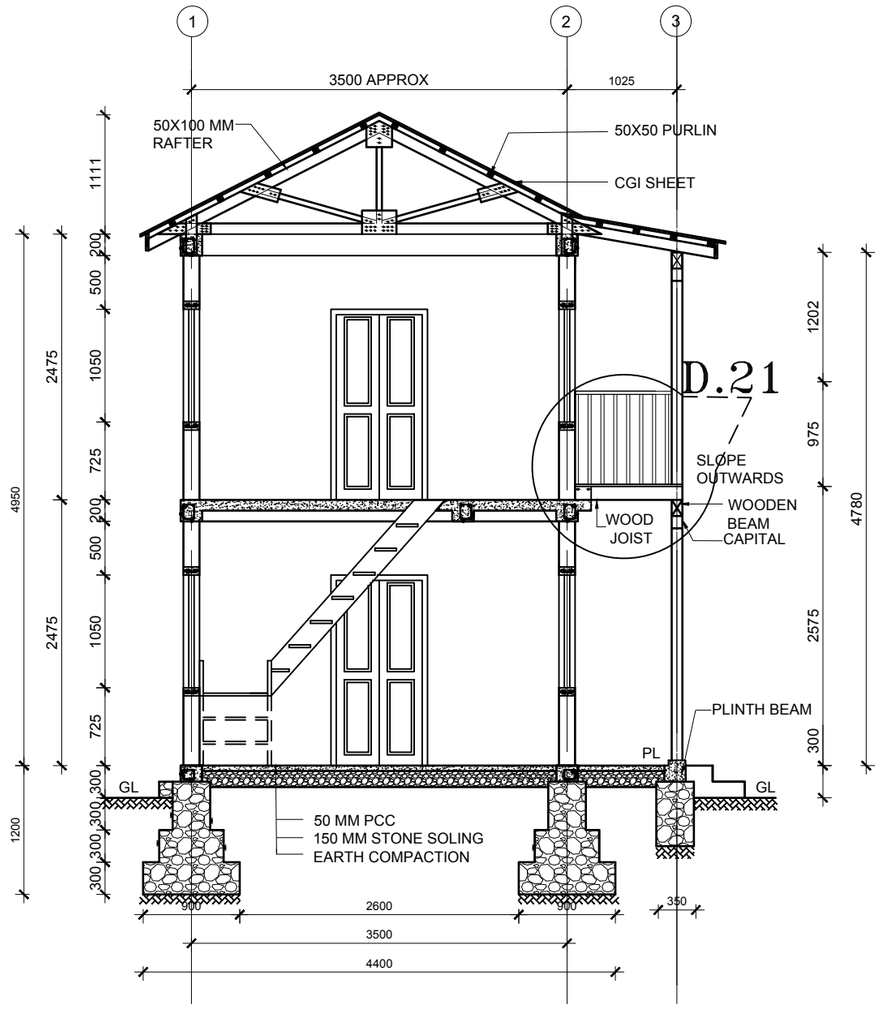


RIGHT ELEVATION

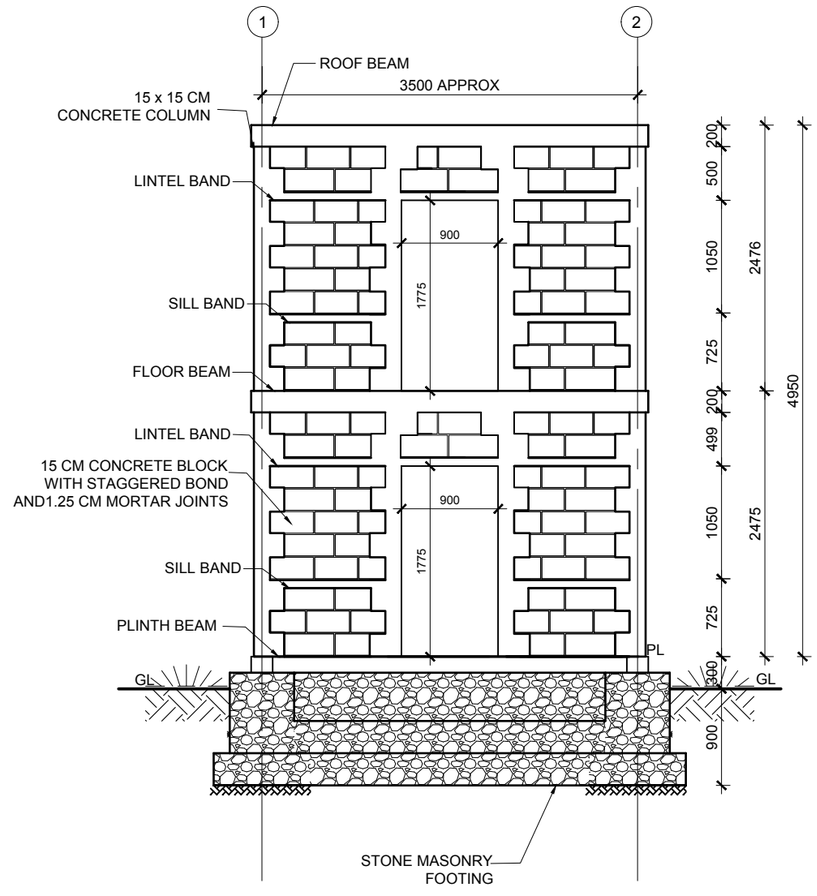
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	A-04
	DRAWING TITLE: **ELEVATIONS**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK

DOUBLE-STORY



DETAIL AT A-1



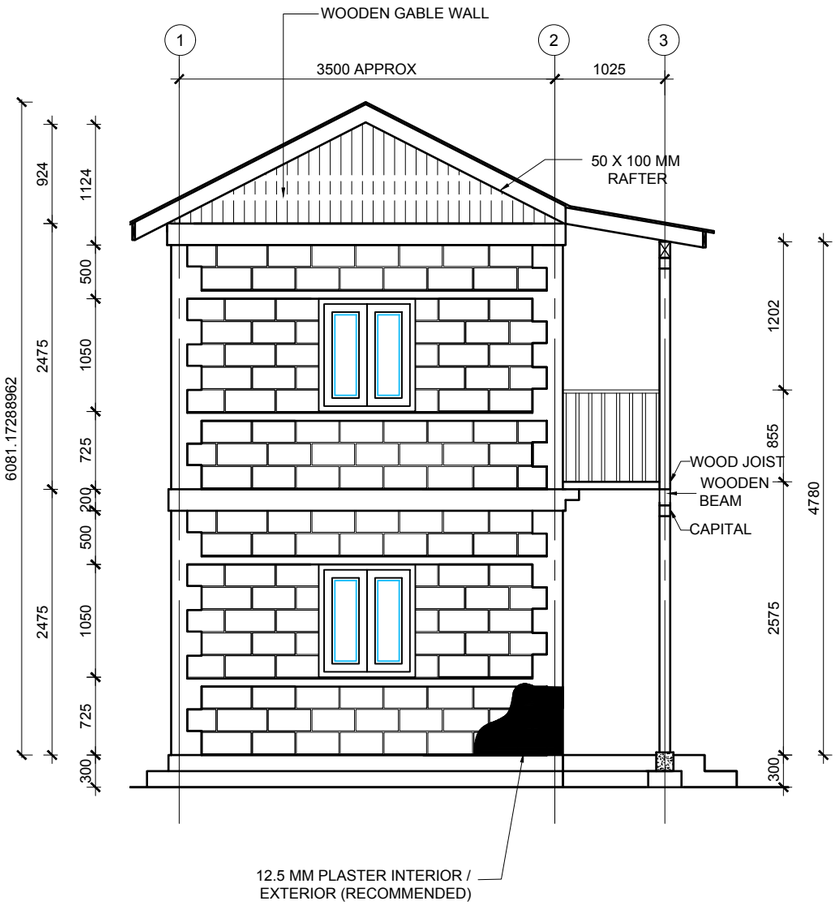
WALL ELEVATION
INTERIOR WALL AT B1-B2

NOTE: FOR DETAIL D 2.1 REFER TO PAGE NO P-02

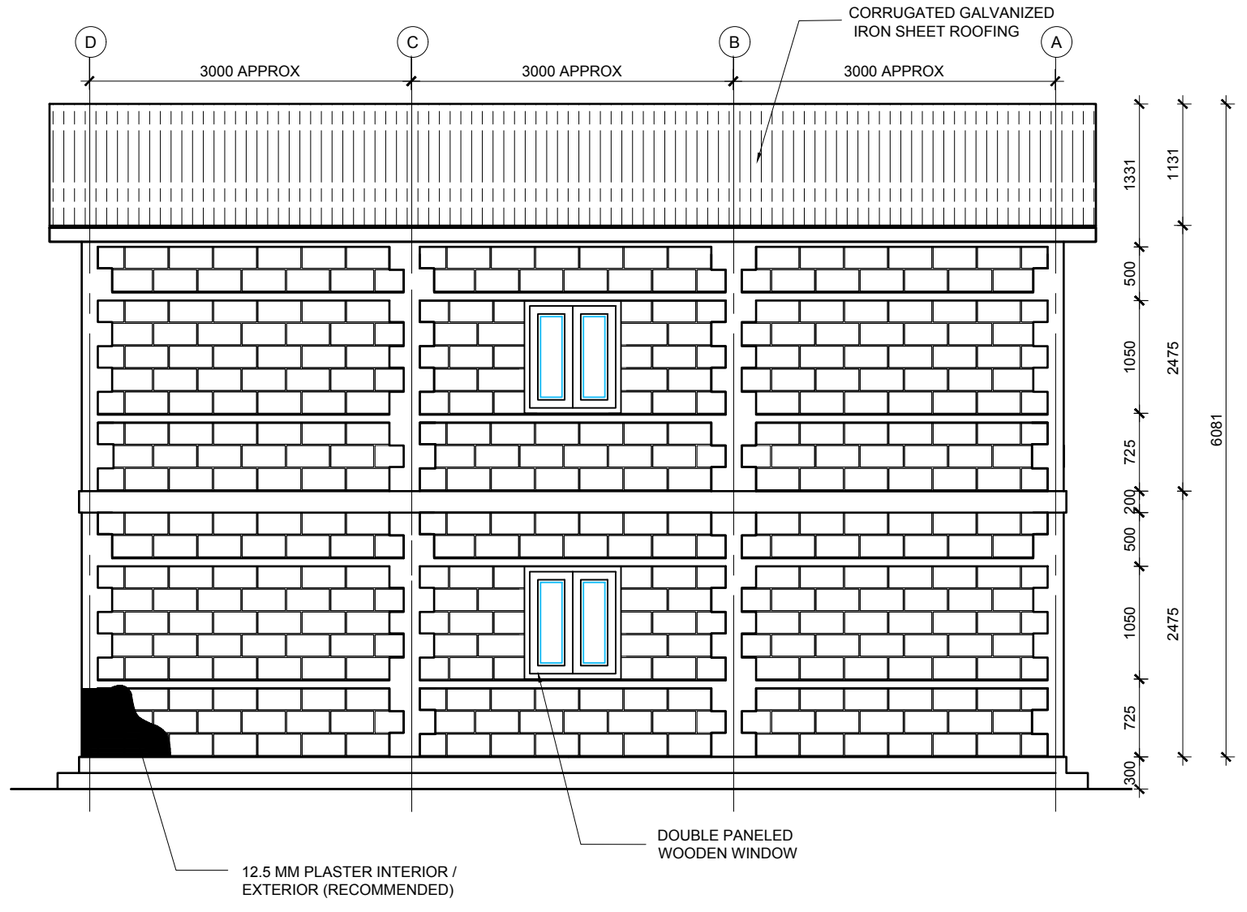
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	A-06
	DRAWING TITLE: **ELEVATION AND SECTION**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK

DOUBLE-STORY



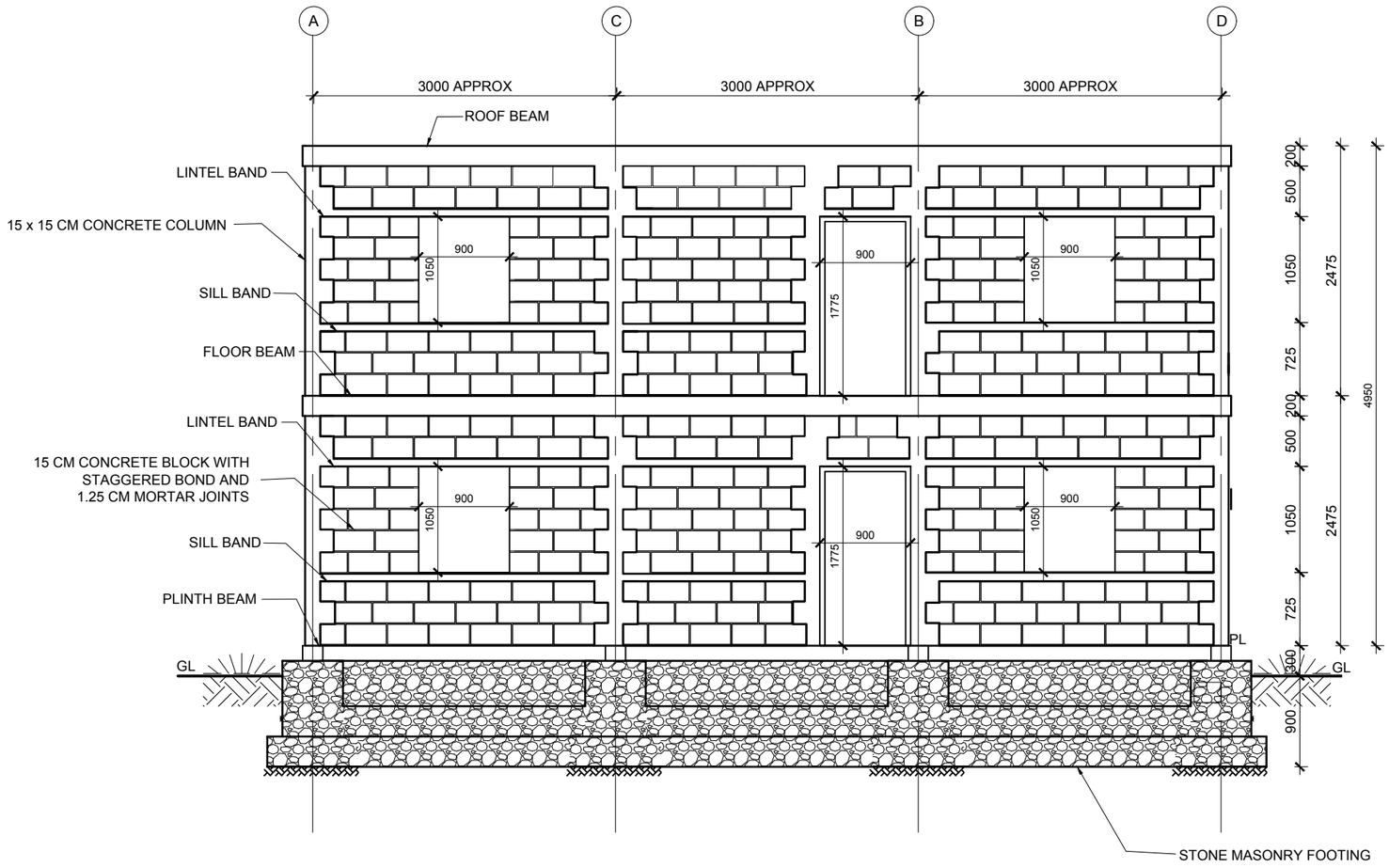
LEFT ELEVATION



BACK ELEVATION

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	A-05
	DRAWING TITLE: **ELEVATIONS**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK **DOUBLE-STORY**

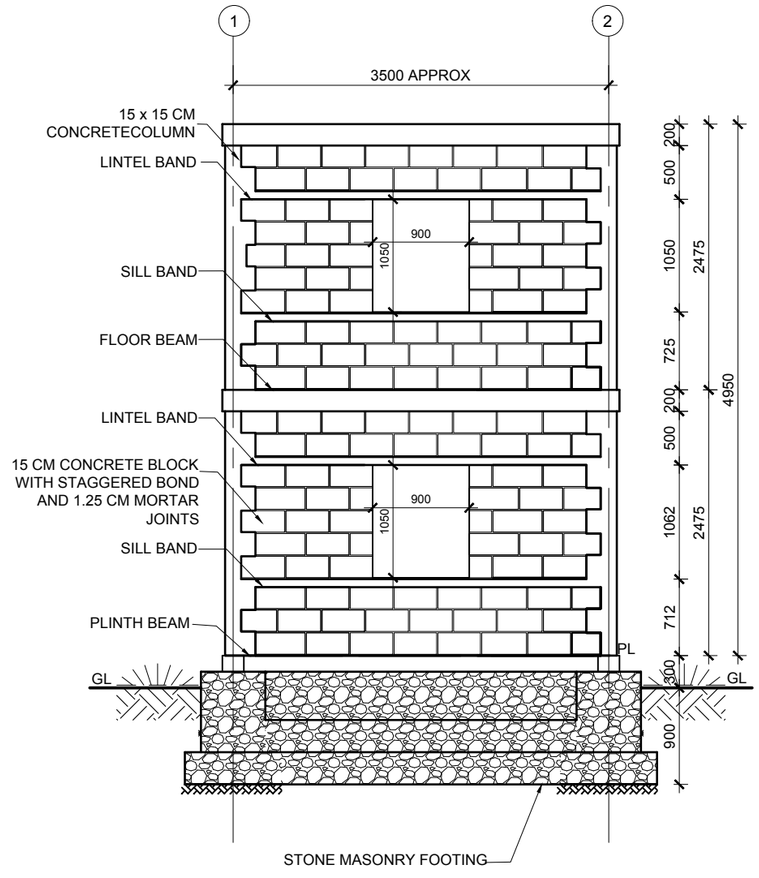


FRONT WALL ELEVATION
EXTERIOR WALL

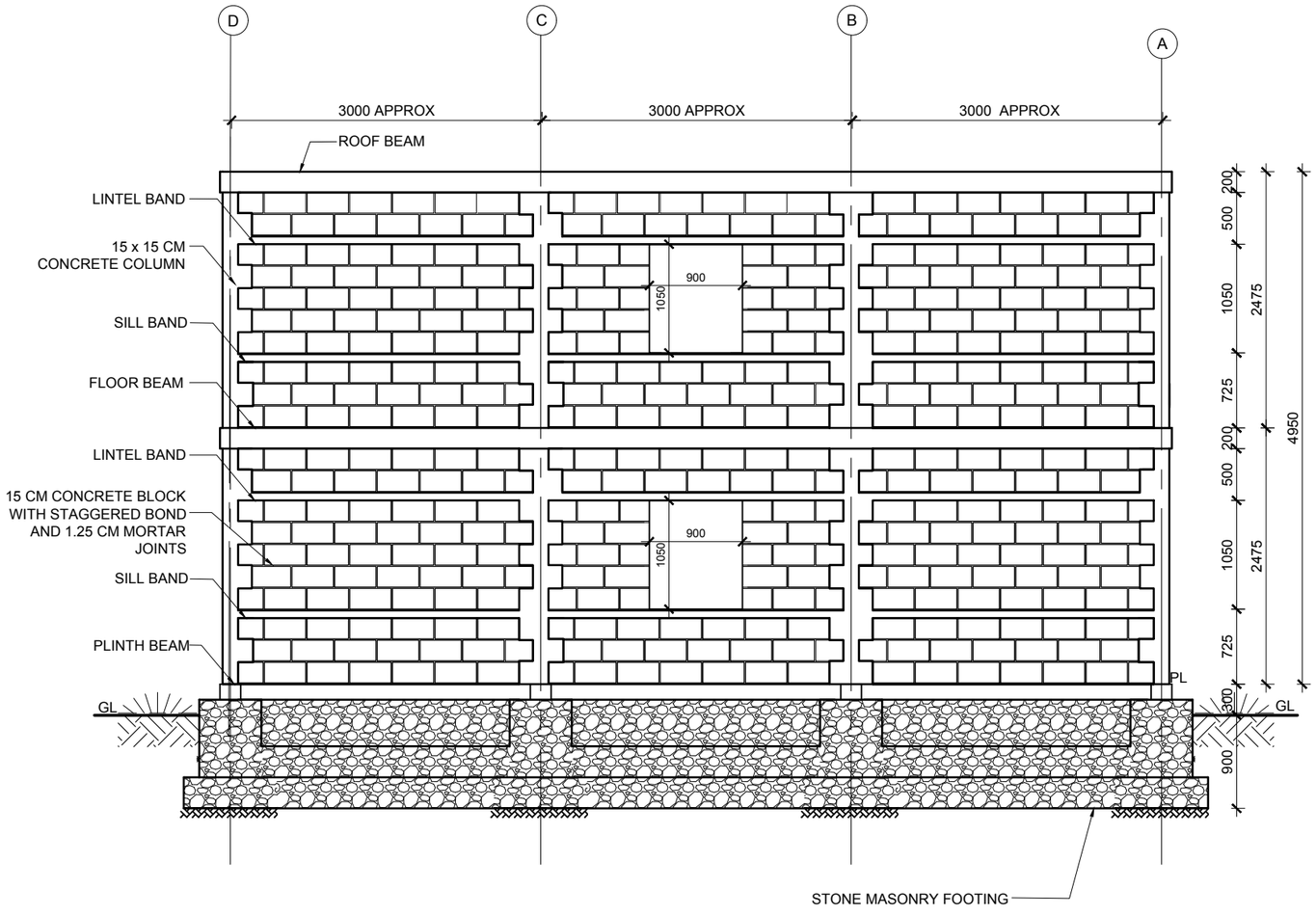
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	A-07
	DRAWING TITLE: **ELEVATIONS**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK

DOUBLE-STORY

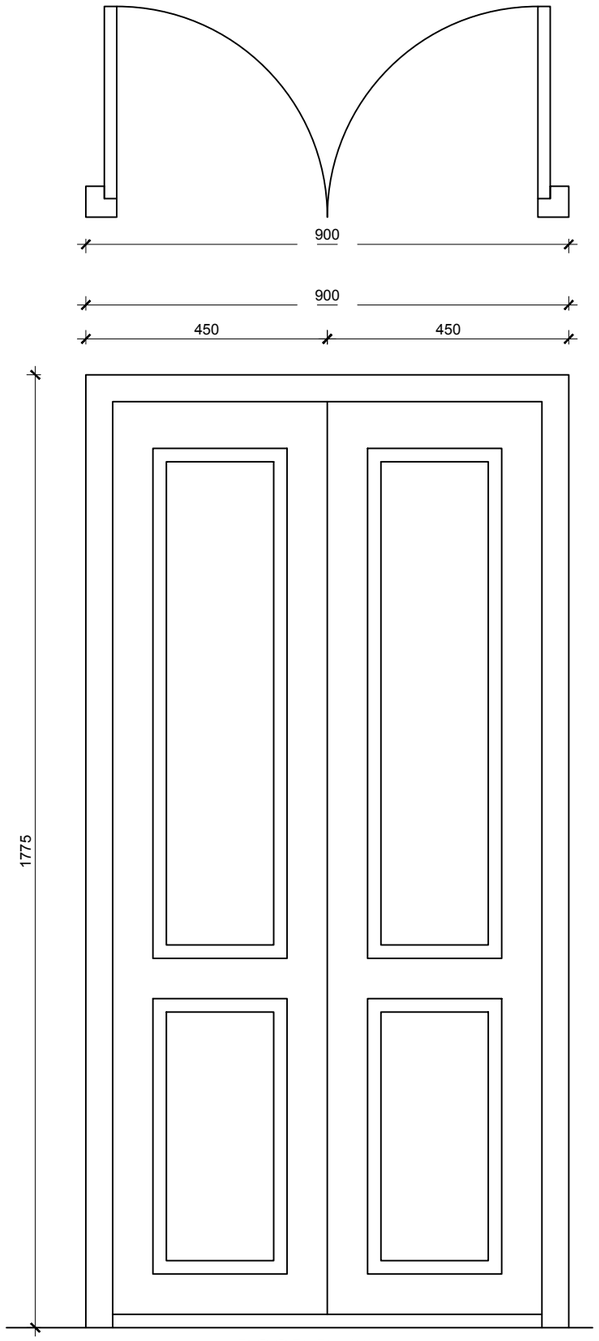


SIDE WALL ELEVATION
EXTERIOR WALL

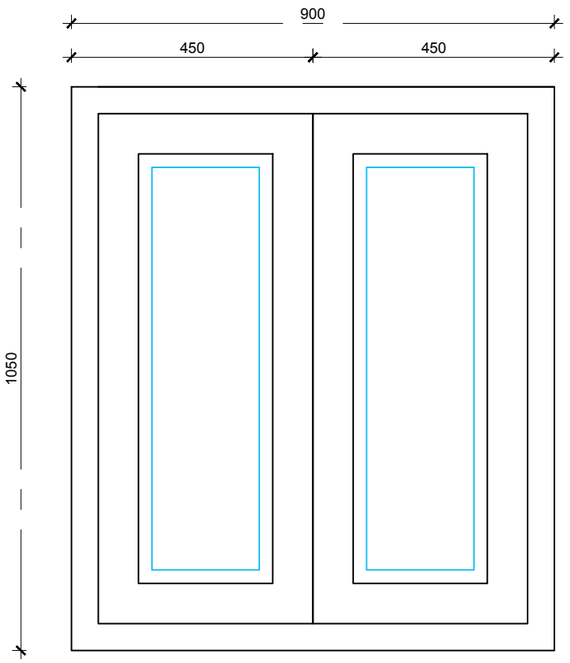


BACK WALL ELEVATION
EXTERIOR WALL

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	A-08
	DRAWING TITLE: **ELEVATIONS**	DESIGNED BY: **BUILD CHANGE**		



DOOR-D1(6)

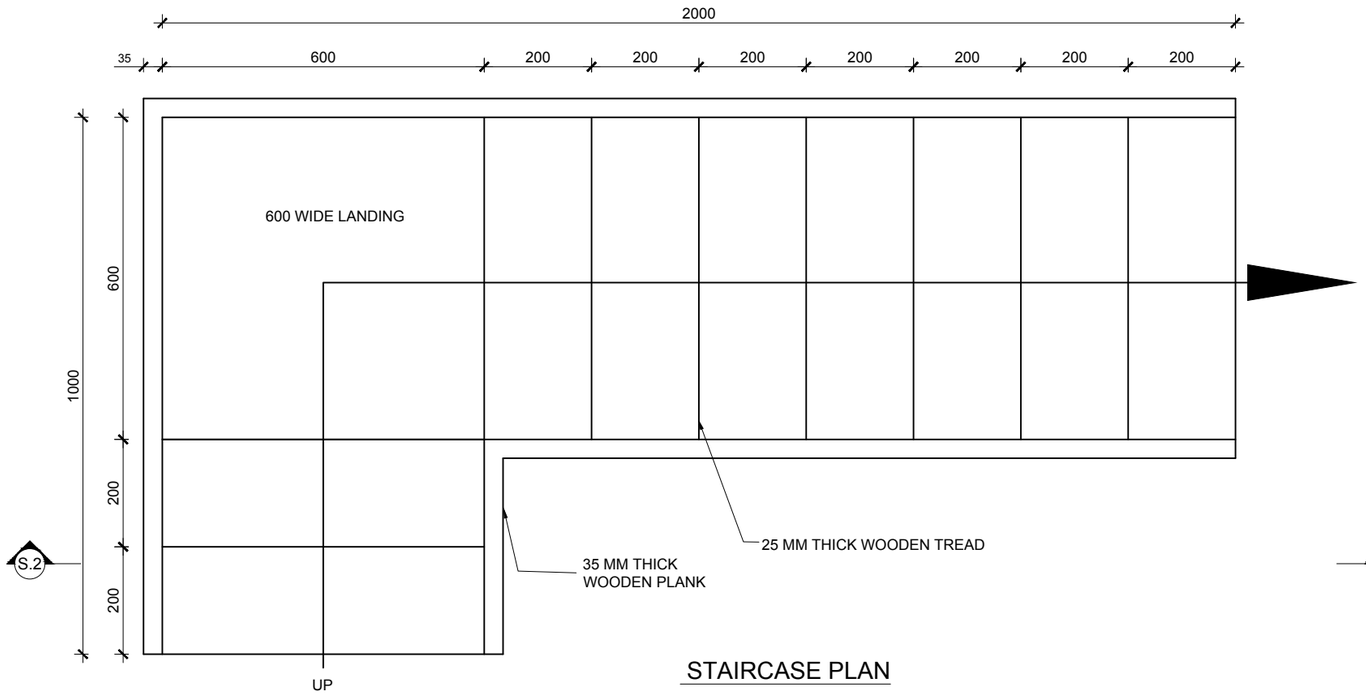


WINDOW-W1(10)

S.N	SYMBOL	SIZES	G.F	F.F	T.F	TOTAL
1	DOOR (D1)	900 X 1775	3	3	--	6
2	WINDOW (W1)	900 X 1050	5	5	--	10

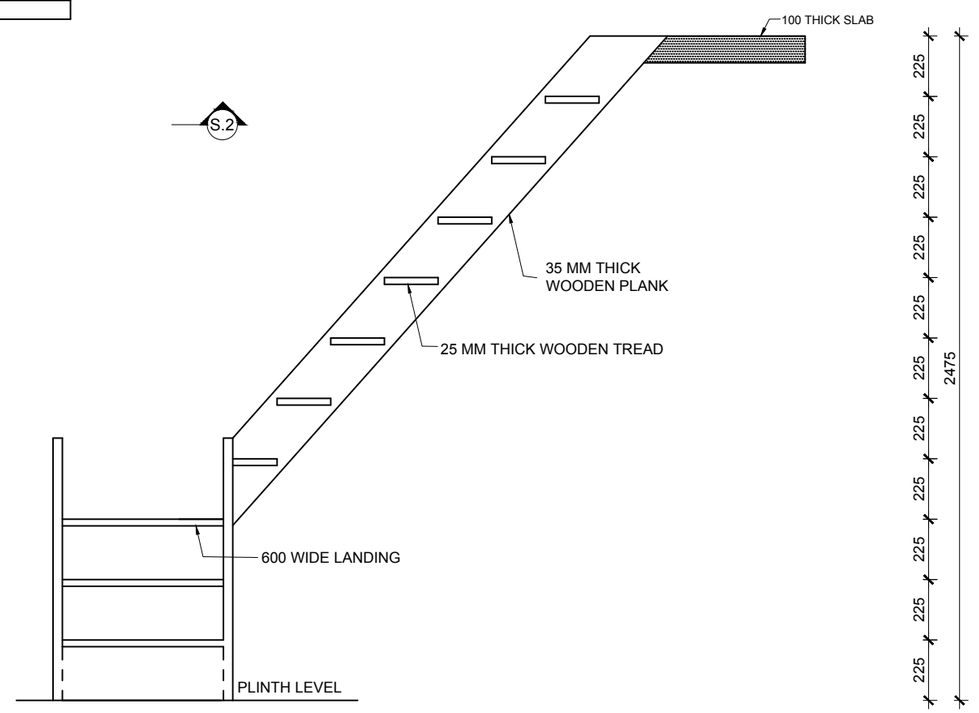
DOOR AND WINDOW SCHEDULE

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:10**	DATE: SEPT , 2016	A-09
	DRAWING TITLE: **DOOR AND WINDOW DETAILS**	DESIGNED BY: **BUILD CHANGE**		



STAIRCASE PLAN

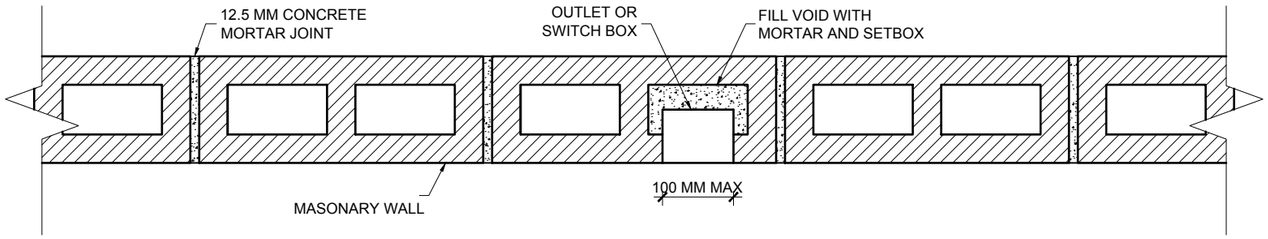
SCALE : 1:10



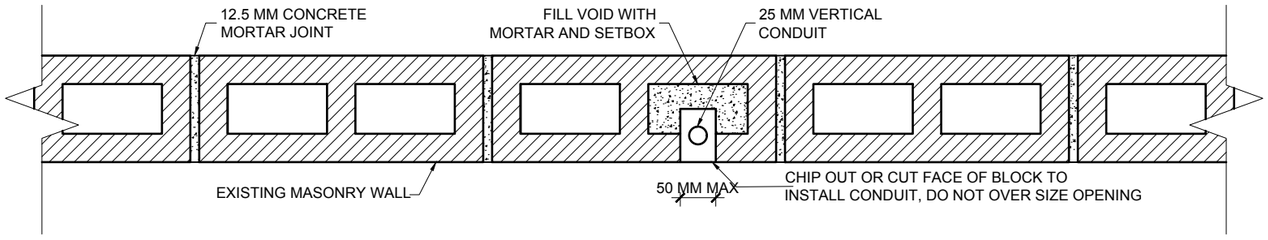
STAIRCASE SECTION (DETAIL AT S.2)

SCALE : 1:20

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **AS GIVEN**	DATE: SEPT , 2016	A-10
	DRAWING TITLE: **STAIRCASE DETAILS**	DESIGNED BY: **BUILD CHANGE**		



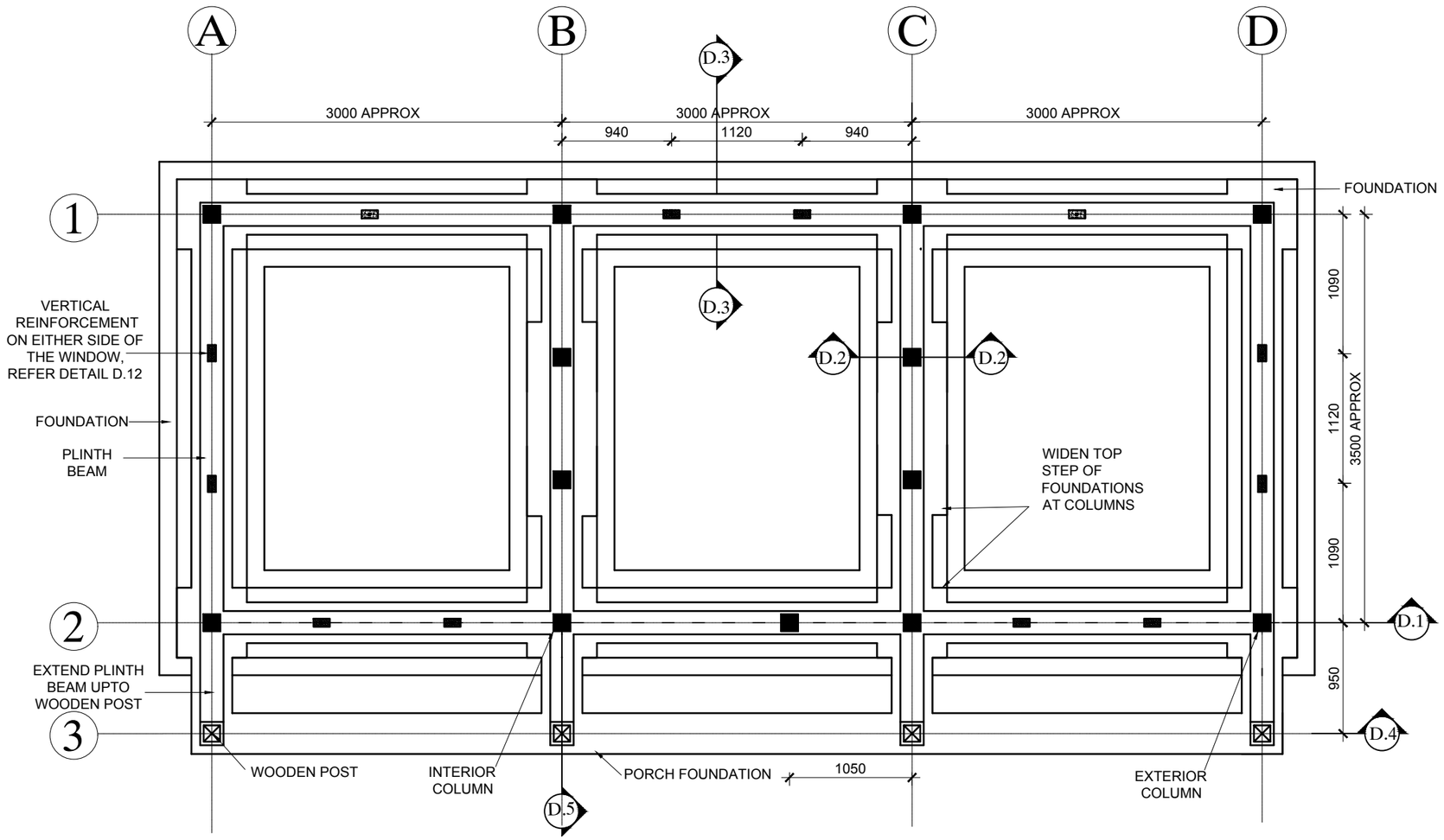
PLACEMENT OF OUTLET OR SWITCH BOX



PLACEMENT OF VERTICAL CONDUIT

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT , 2016	A-11
	DRAWING TITLE: **PROVISIONS FOR PLACEMENT OF ELECTRICAL SYSTEM**	DESIGNED BY: **BUILD CHANGE**		

STRUCTURAL DRAWINGS

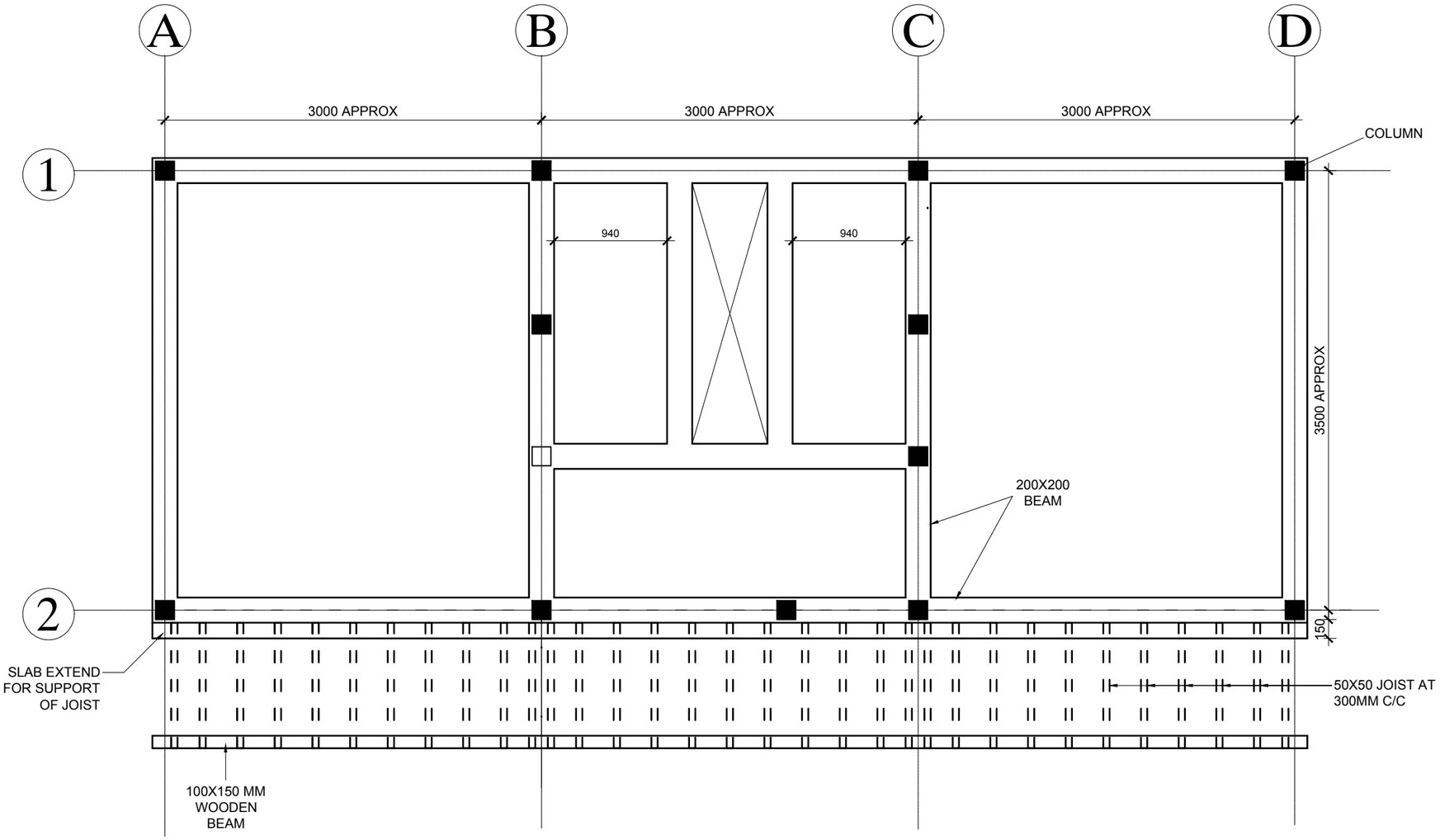


FOUNDATION AND PLINTH BEAM LAYOUT

LEGEND

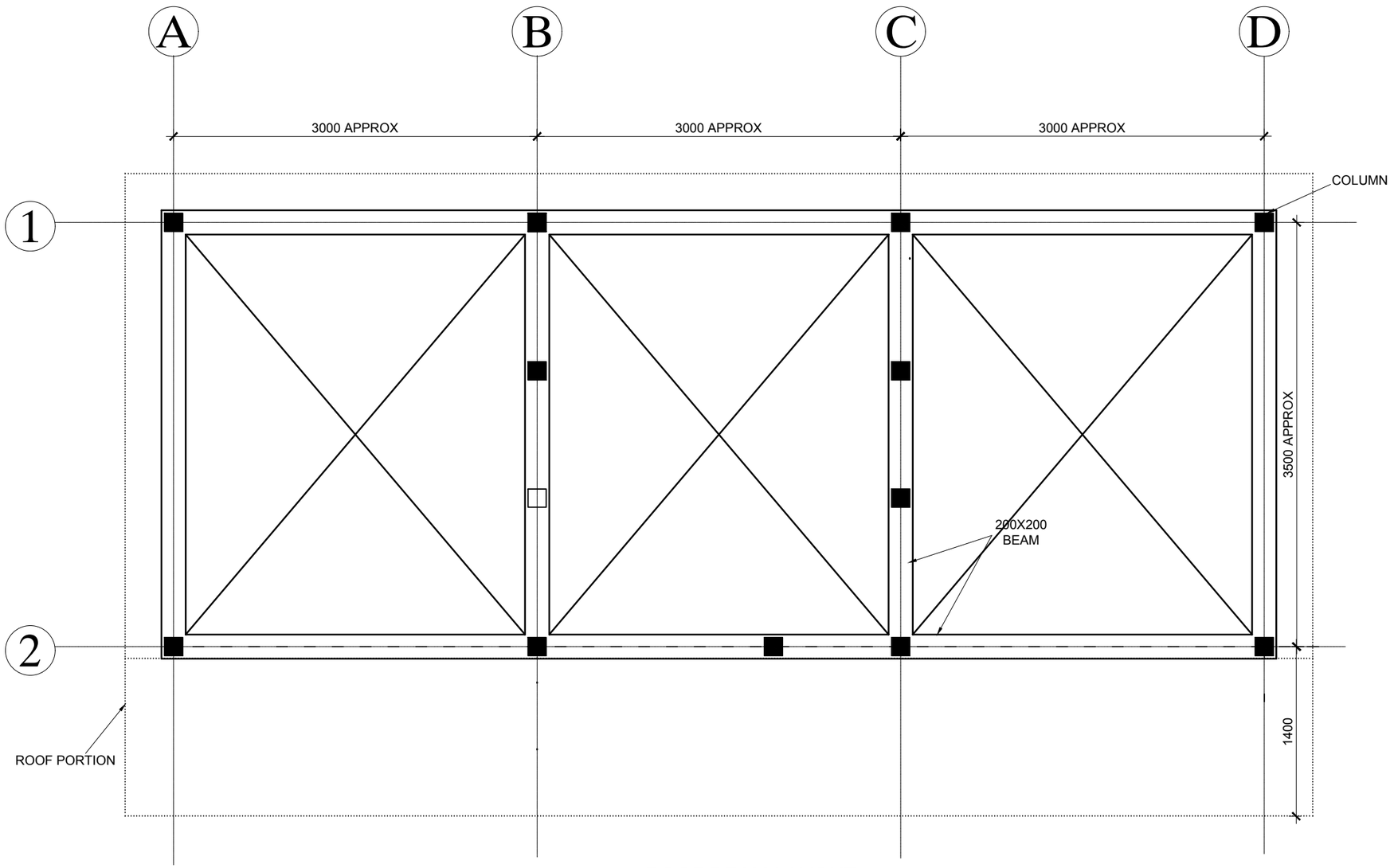
■	REINFORCED CONCRETE COLUMN
▬	VERTICAL REINFORCEMENT ON EITHER SIDE OF THE WINDOW
⊠	WOOD POST

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-01
	DRAWING TITLE: **COLUMN AND FOUNDATION LAYOUT**	DESIGNED BY: **BUILD CHANGE**		



FIRST FLOOR BEAM LAYOUT

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016
	DRAWING TITLE: **BEAM LAYOUT**	DESIGNED BY: **BUILD CHANGE**	S-02

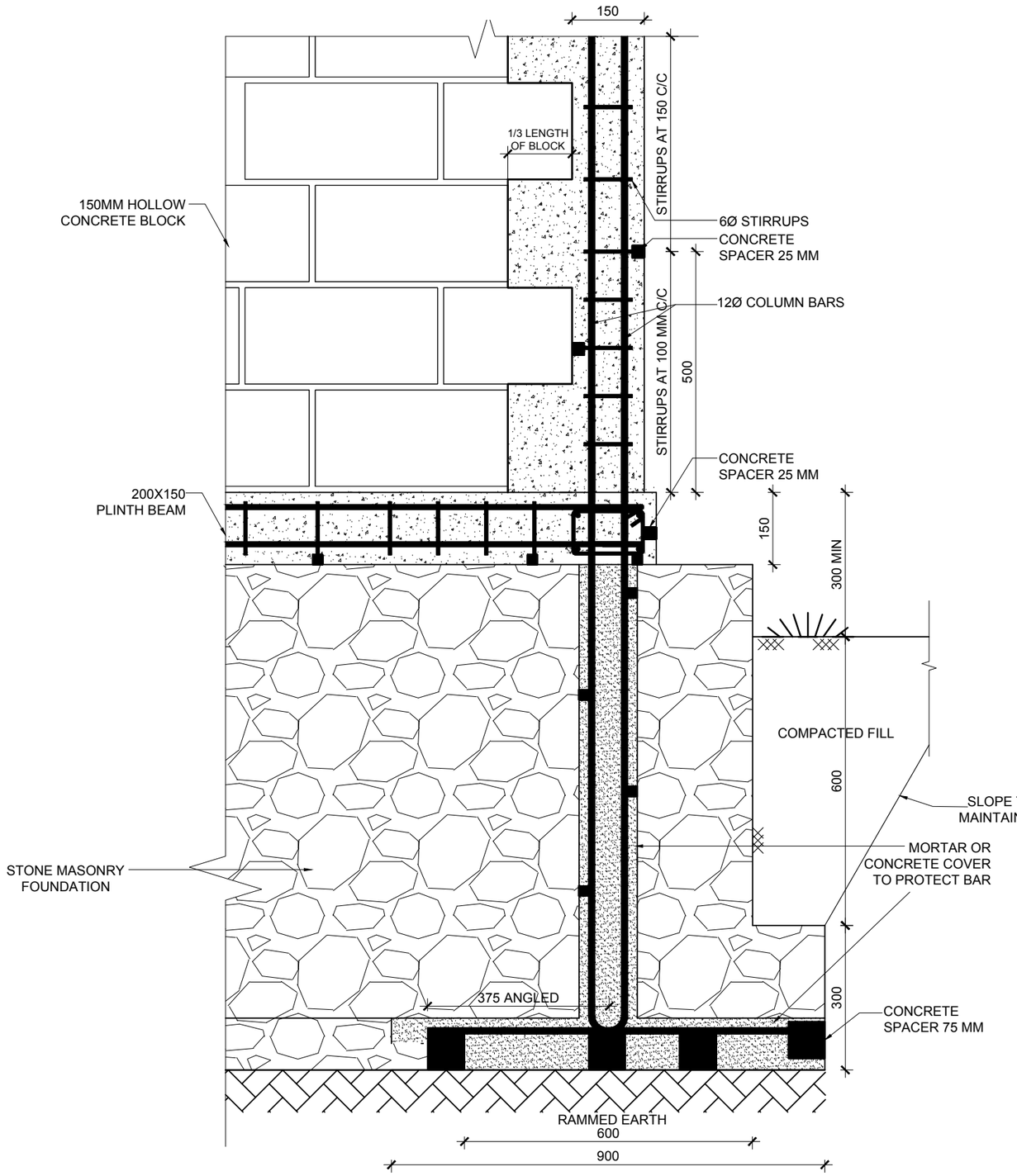


ROOF BEAM LAYOUT

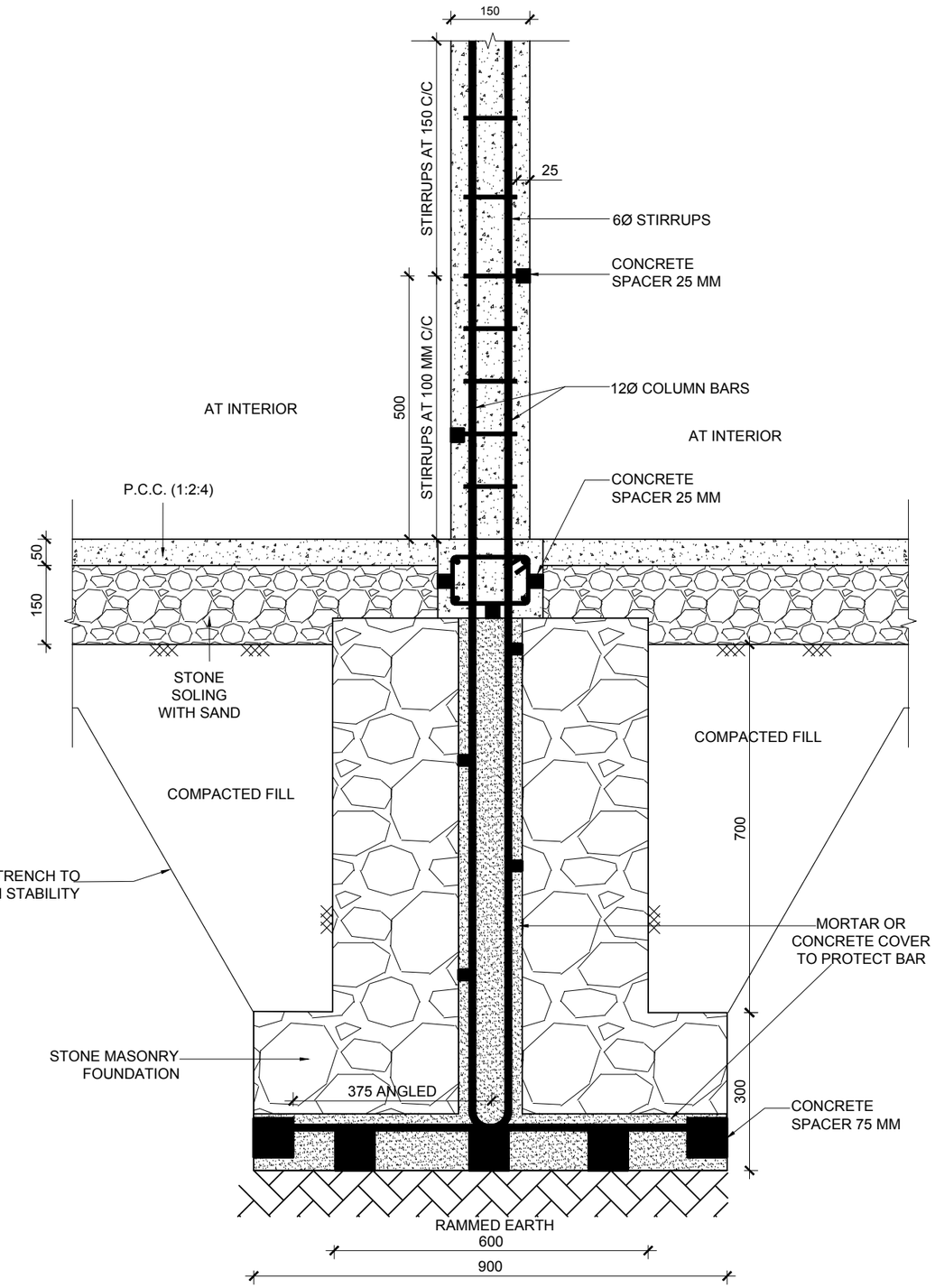
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016
	DRAWING TITLE: **BEAM LAYOUT**	DESIGNED BY: **BUILD CHANGE**	S-03

MODEL HOLLOW CONCRETE BLOCK

DOUBLE-STORY

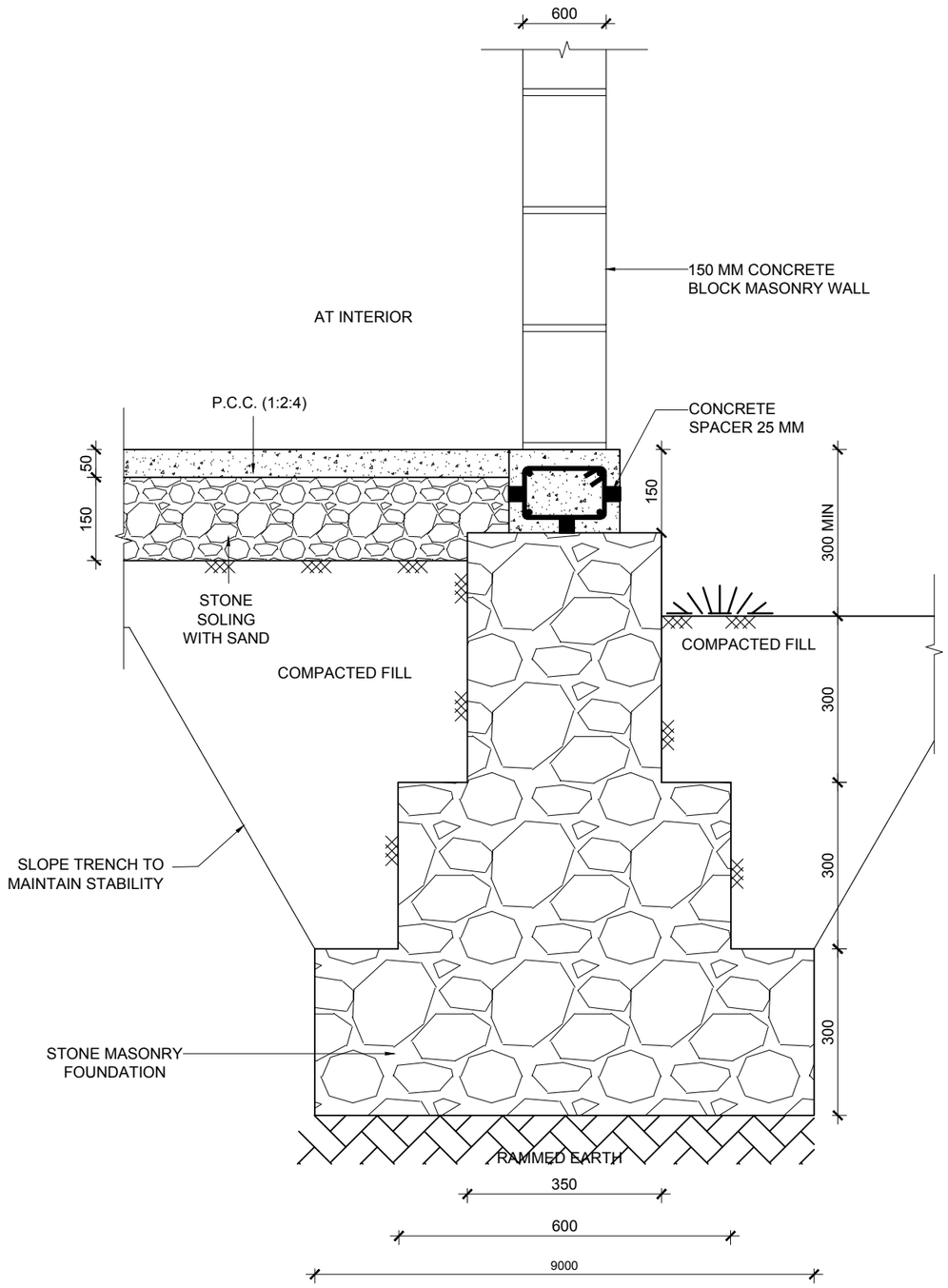


SECTION OF EXTERNAL FOUNDATION
DETAIL AT D.1



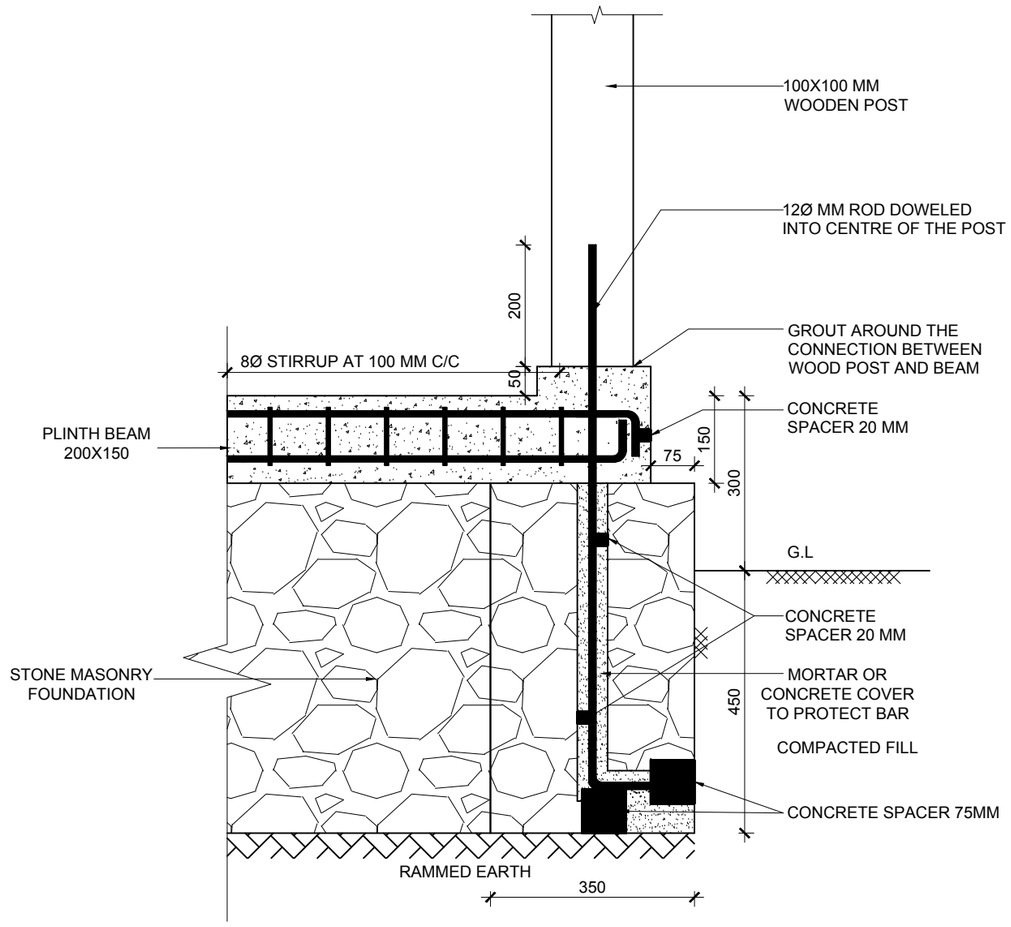
SECTION OF INTERIOR FOUNDATION
DETAIL AT D.2

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-04
	DRAWING TITLE: **FOUNDATION SECTION**	DESIGNED BY: **BUILD CHANGE**		



FOUNDATION SECTION OF EXTERIOR WALL

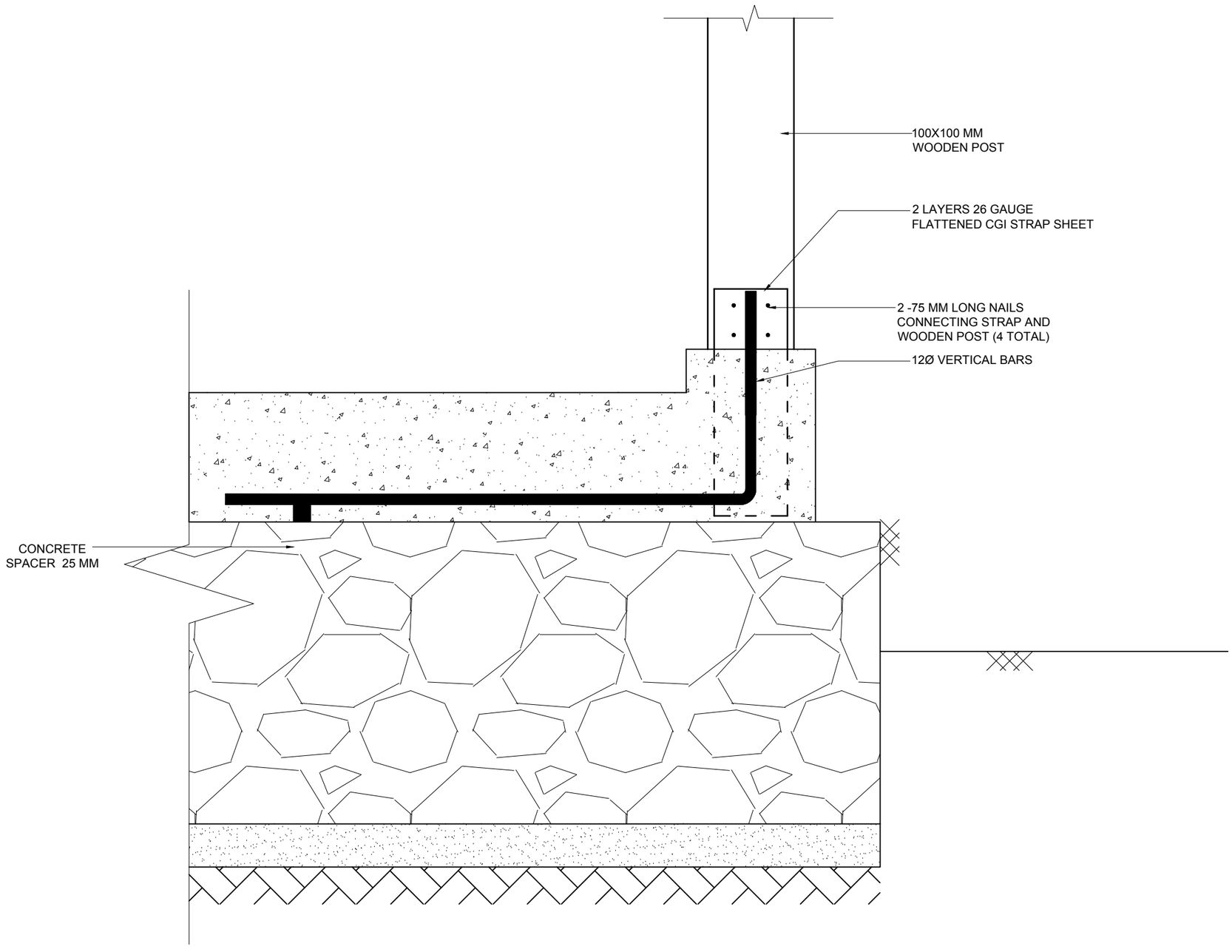
DETAIL AT D.3



FOUNDATION SECTION OF COLUMN POST

DETAIL AT D.4

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-05
	DRAWING TITLE: **FOUNDATION AND COLUMN POST SECTION**	DESIGNED BY: **BUILD CHANGE**		

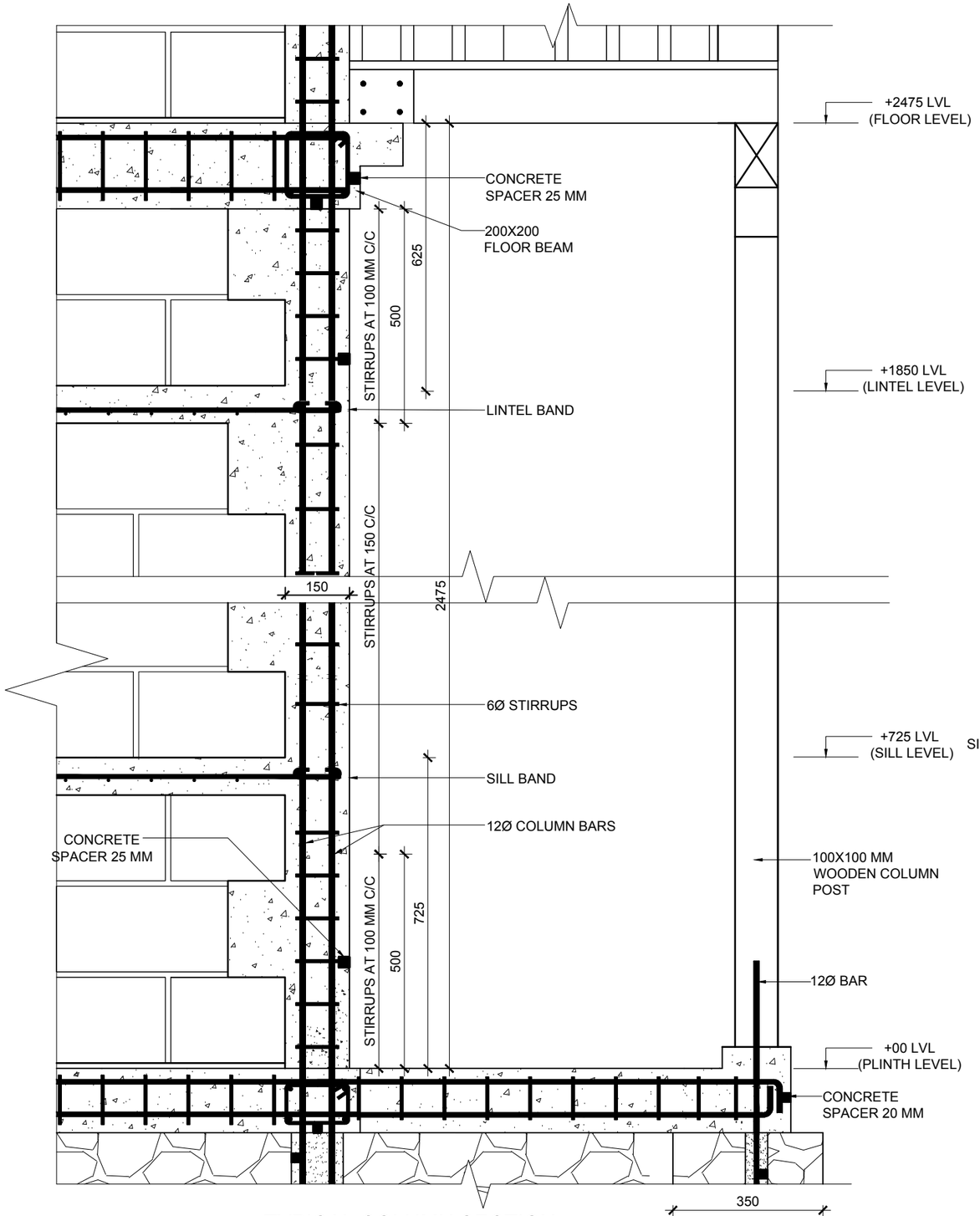


SECTION OF INTERNAL PORCH FOUNDATION
DETAIL AT D.4

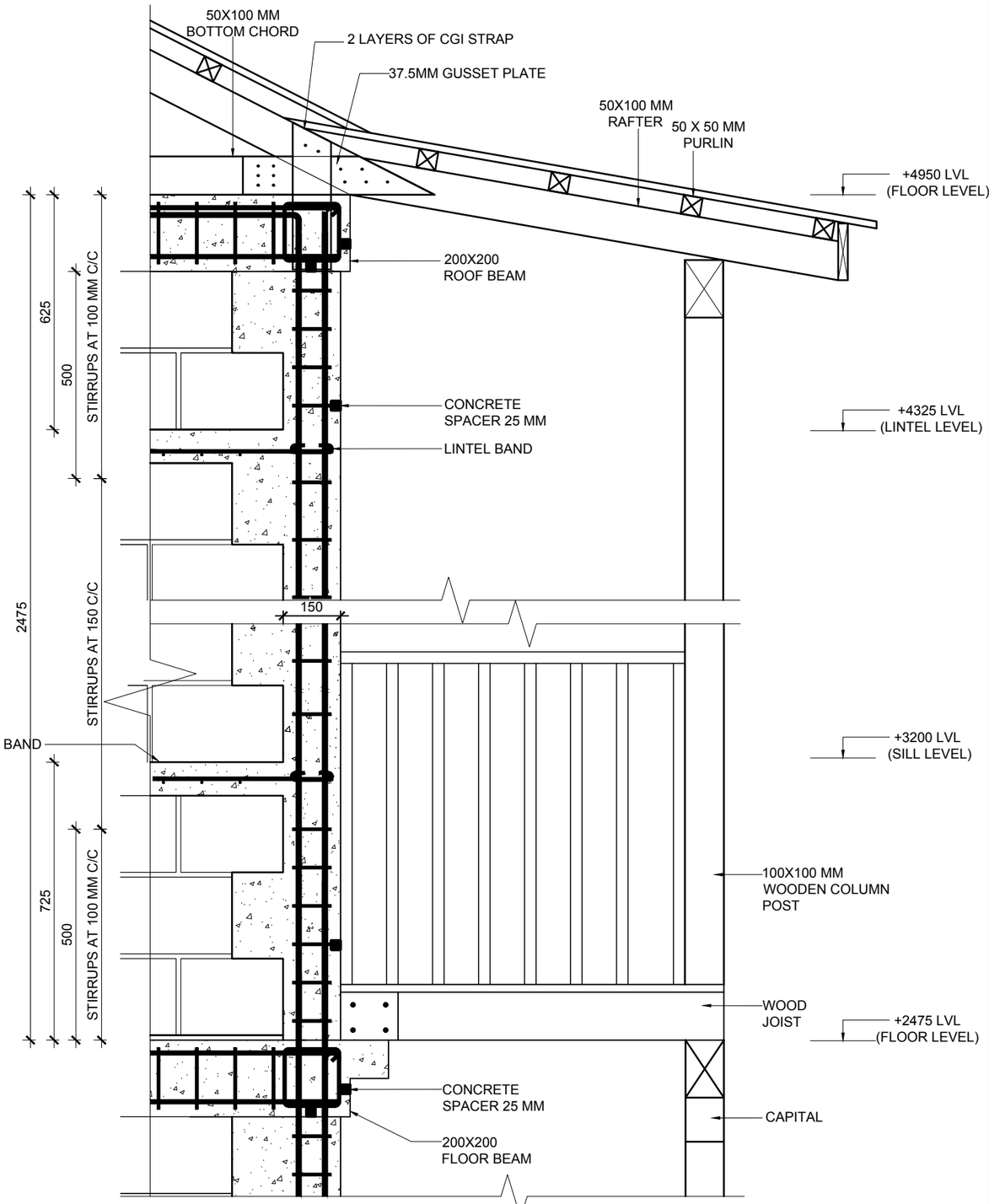
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:10**	DATE: SEPT, 2016	S-06
	DRAWING TITLE: **FOUNDATION AND COLUMN POST SECTION**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK

DOUBLE-STORY

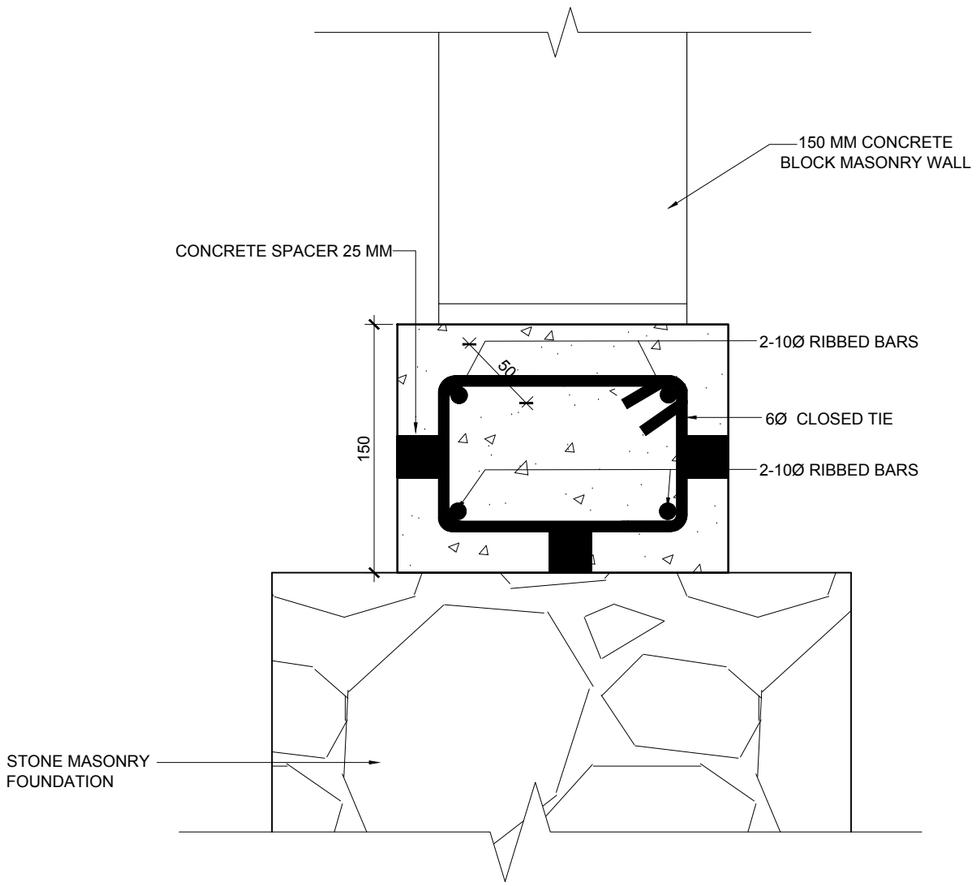


TYPICAL COLUMN SECTION
DETAIL AT D.5 UP TO FIRST FLOOR

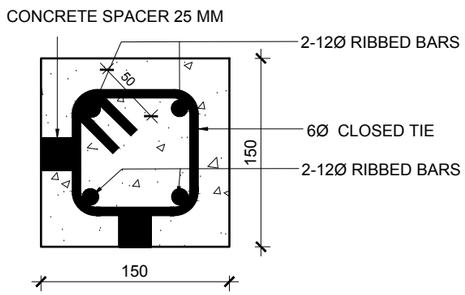


TYPICAL COLUMN SECTION
DETAIL AT D.5 UP TO ROOF

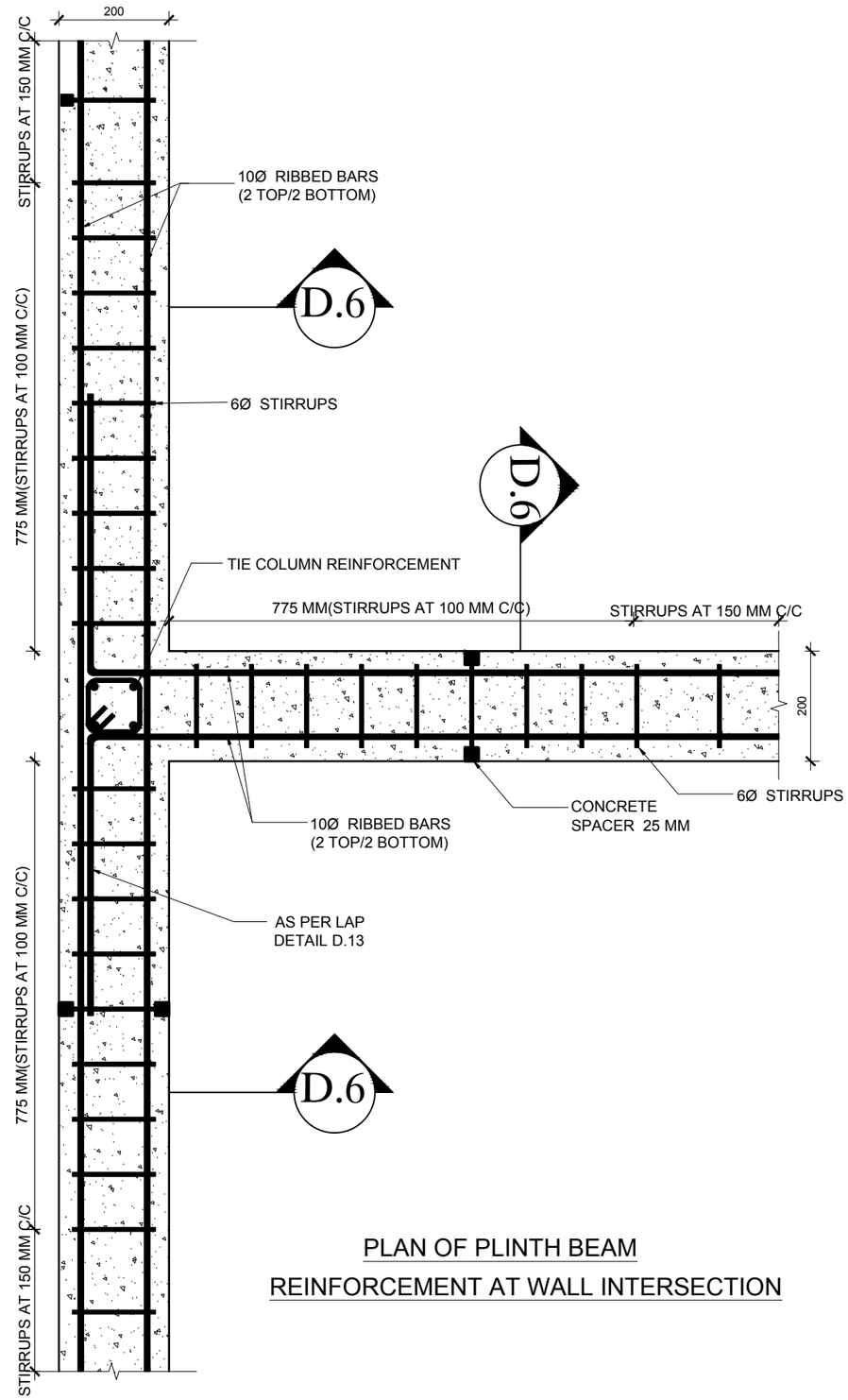
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016
	DRAWING TITLE: **FOUNDATION SECTION**	DESIGNED BY: **BUILD CHANGE**	S-07



SECTION OF PLINTH BEAM REINFORCEMENT
DETAIL AT D.6

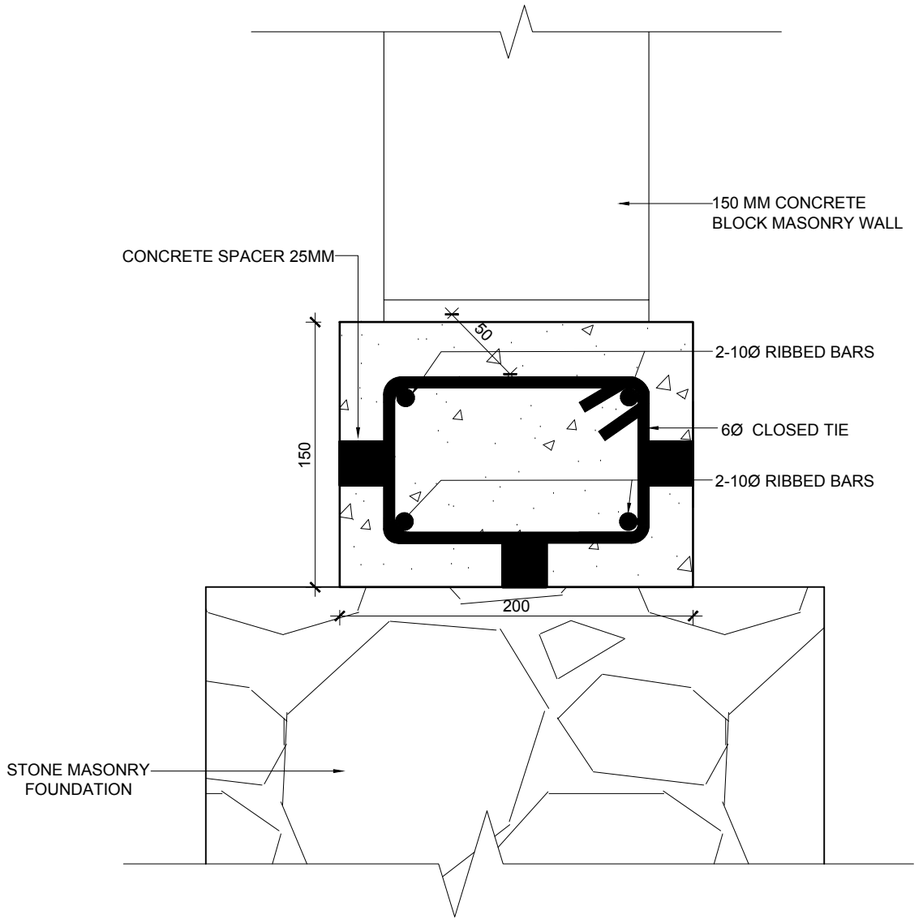


SECTION OF COLUMN AT WALL INTERSECTION

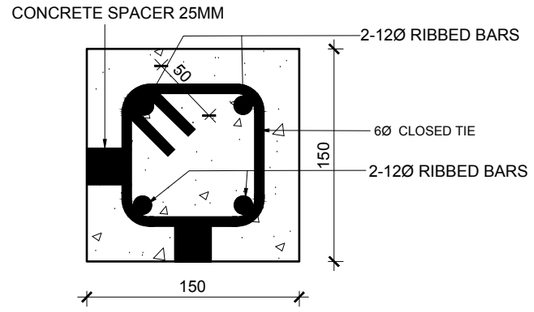


PLAN OF PLINTH BEAM
REINFORCEMENT AT WALL INTERSECTION

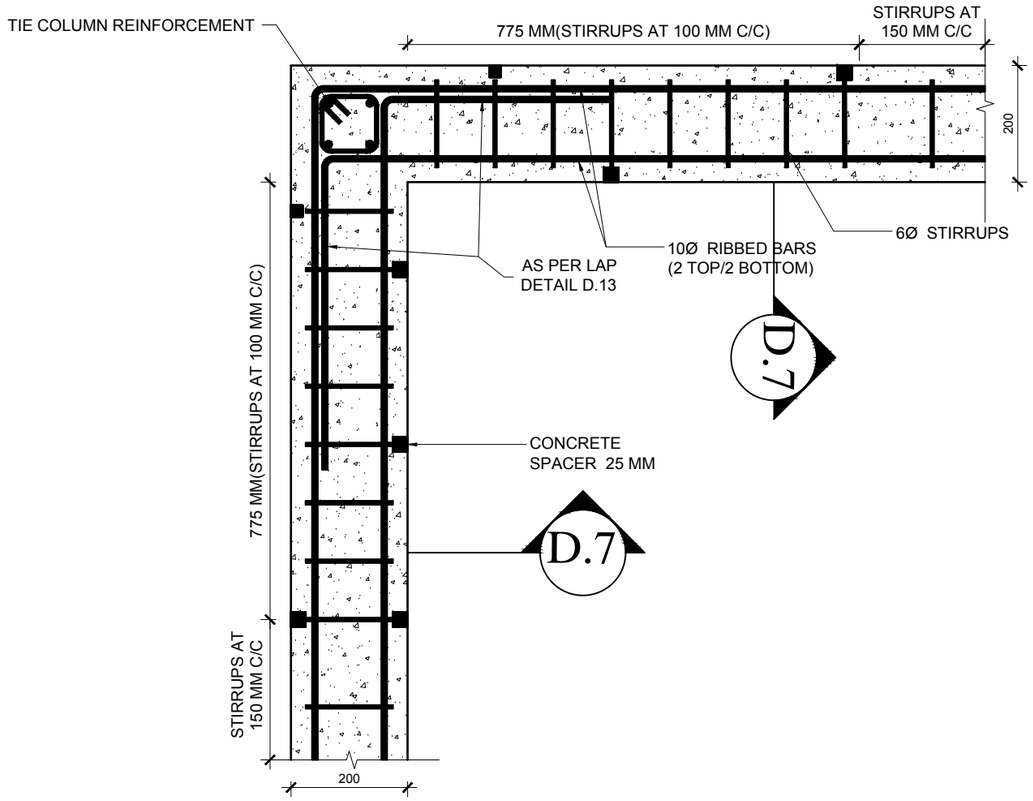
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-08
	DRAWING TITLE: **PLAN SECTION OF PLINTH AT CORNER AND SECTION**	DESIGNED BY: **BUILD CHANGE**		



SECTION OF PLINTH BEAM REINFORCEMENT
DETAIL AT D.7

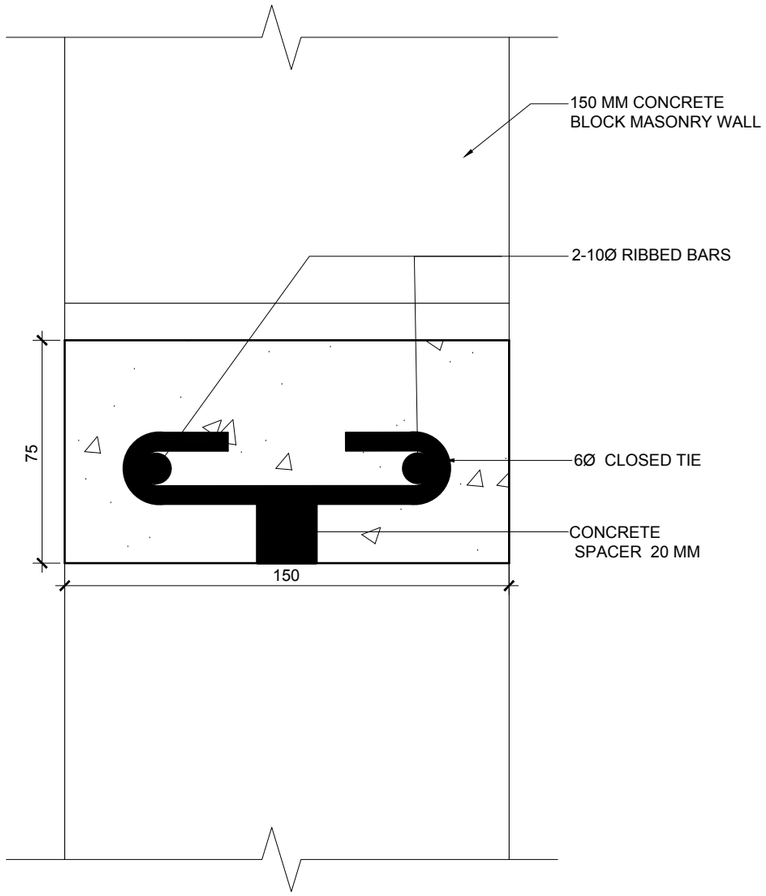


SECTION OF COLUMN AT CORNER

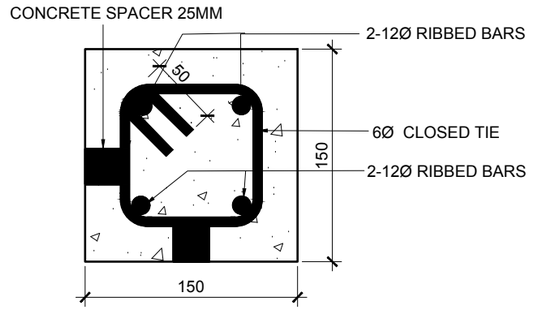


PLAN OF PLINTH BEAM
REINFORCEMENT AT CORNER

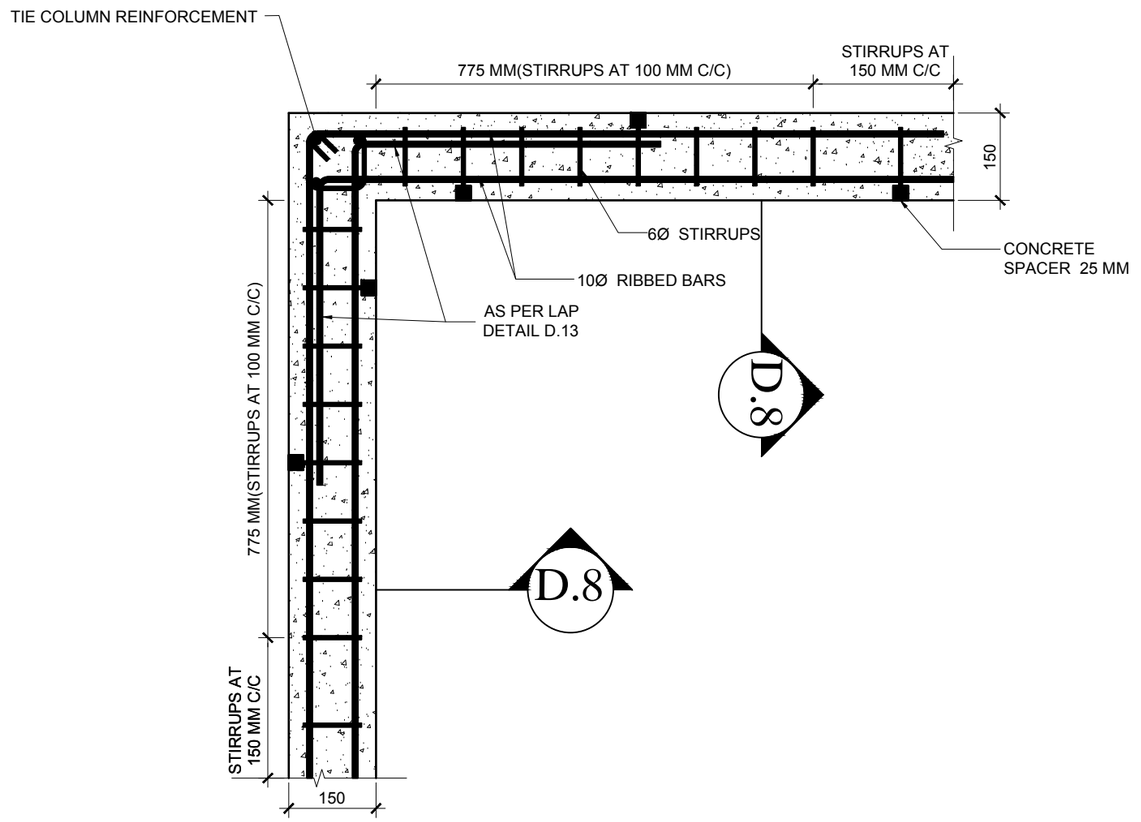
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-09
	DRAWING TITLE: **PLAN SECTION OF PLINTH AT CORNER AND SECTION**	DESIGNED BY: **BUILD CHANGE**		



SECTION OF SILL/LINTEL REINFORCEMENT
DETAIL AT D.8

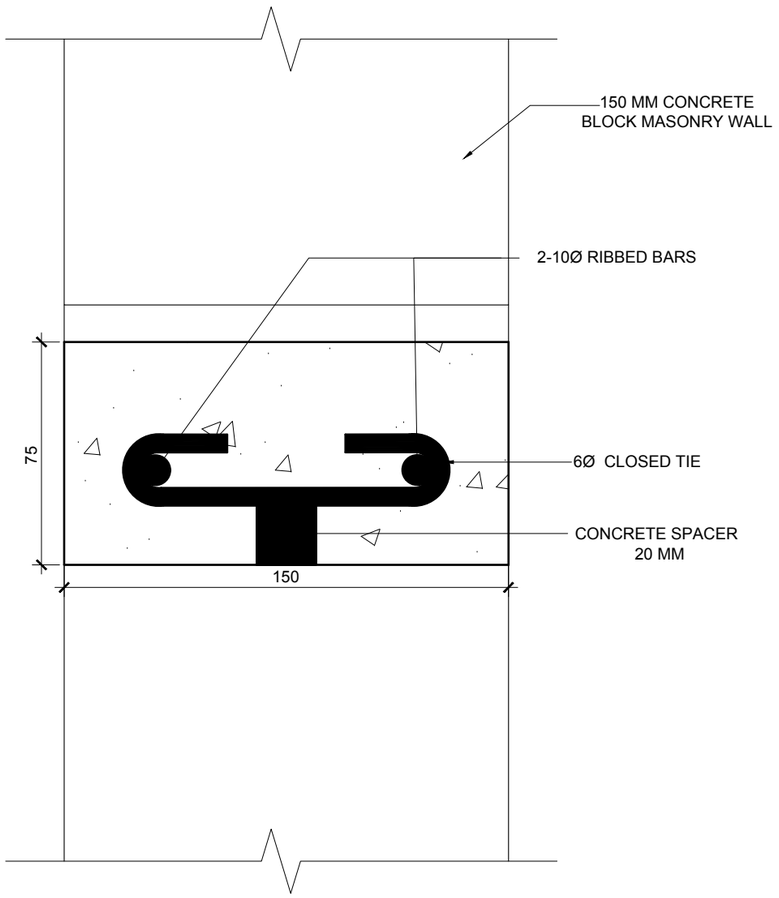


SECTION OF COLUMN AT CORNER

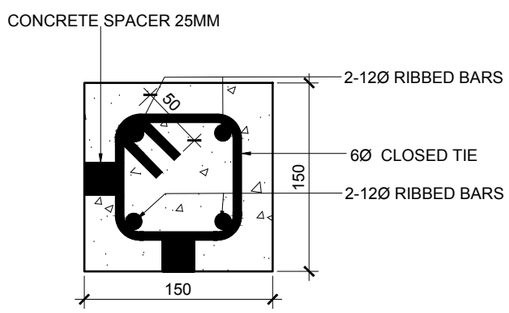


PLAN OF SILL/LINTEL
REINFORCEMENT AT CORNER

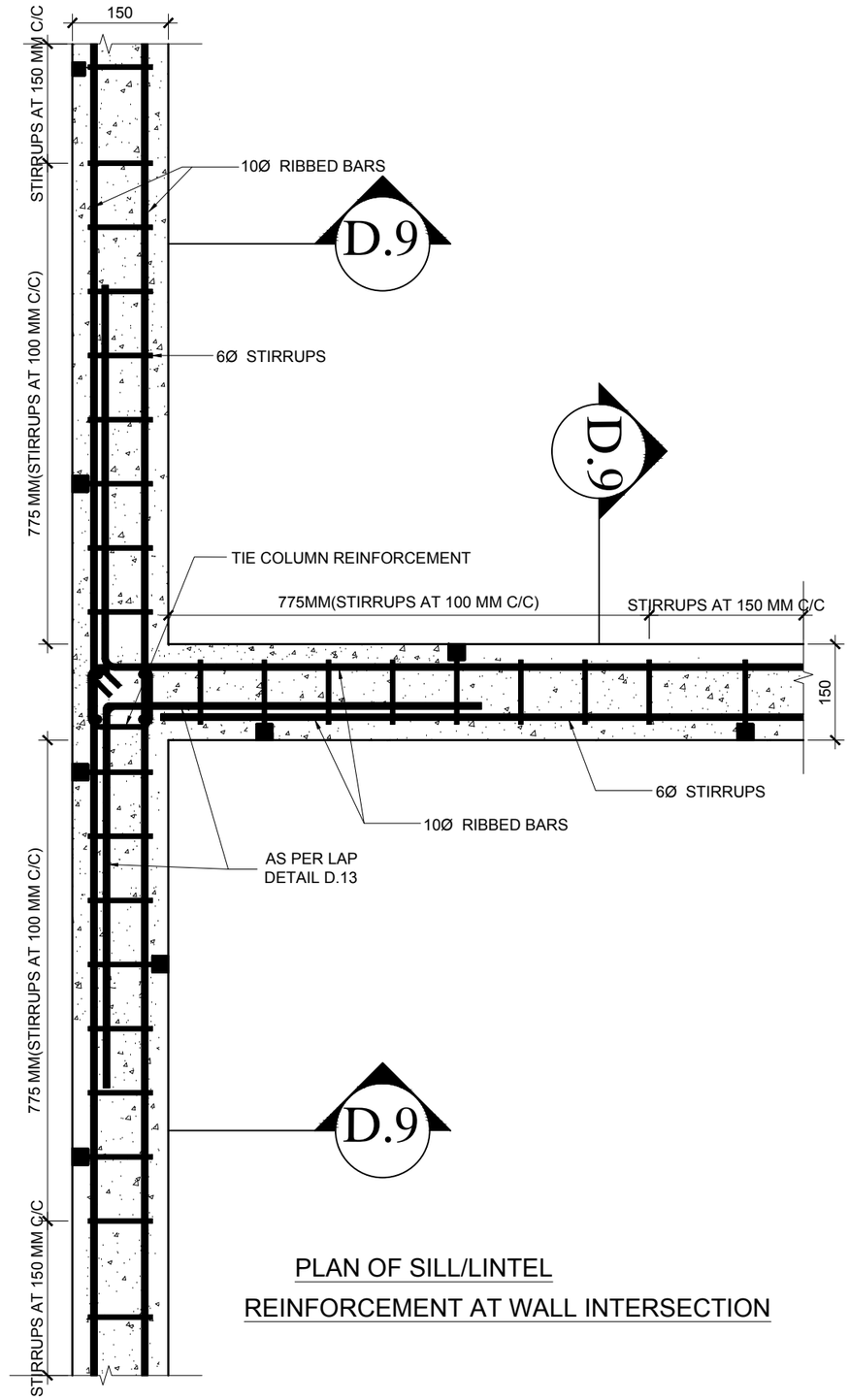
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-10
	DRAWING TITLE: **PLAN SECTION OF LINTEL/SILL AT CORNER AND SECTION**	DESIGNED BY: **BUILD CHANGE**		



SECTION OF SILL/LINTEL REINFORCEMENT
DETAIL AT D.9

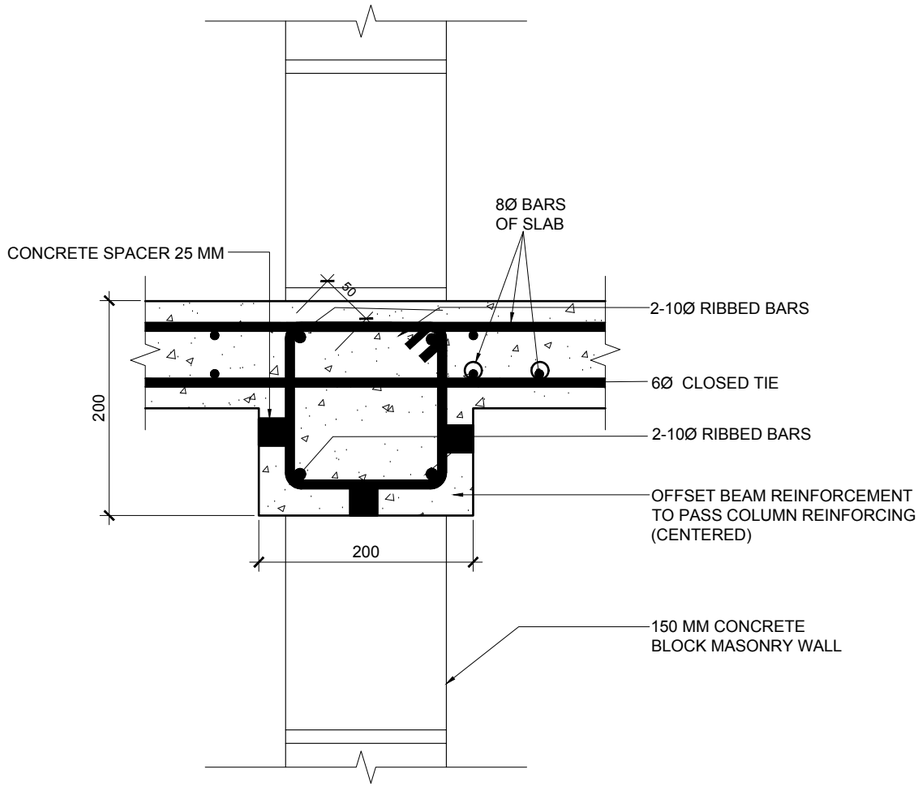


SECTION OF COLUMN AT WALL INTERSECTION

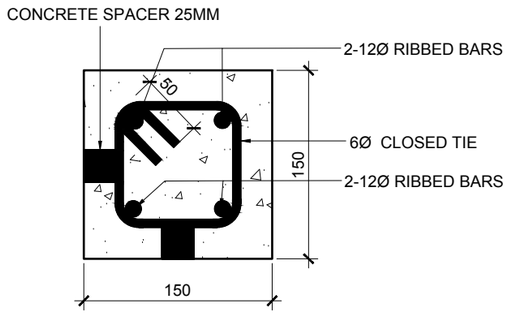


PLAN OF SILL/LINTEL
REINFORCEMENT AT WALL INTERSECTION

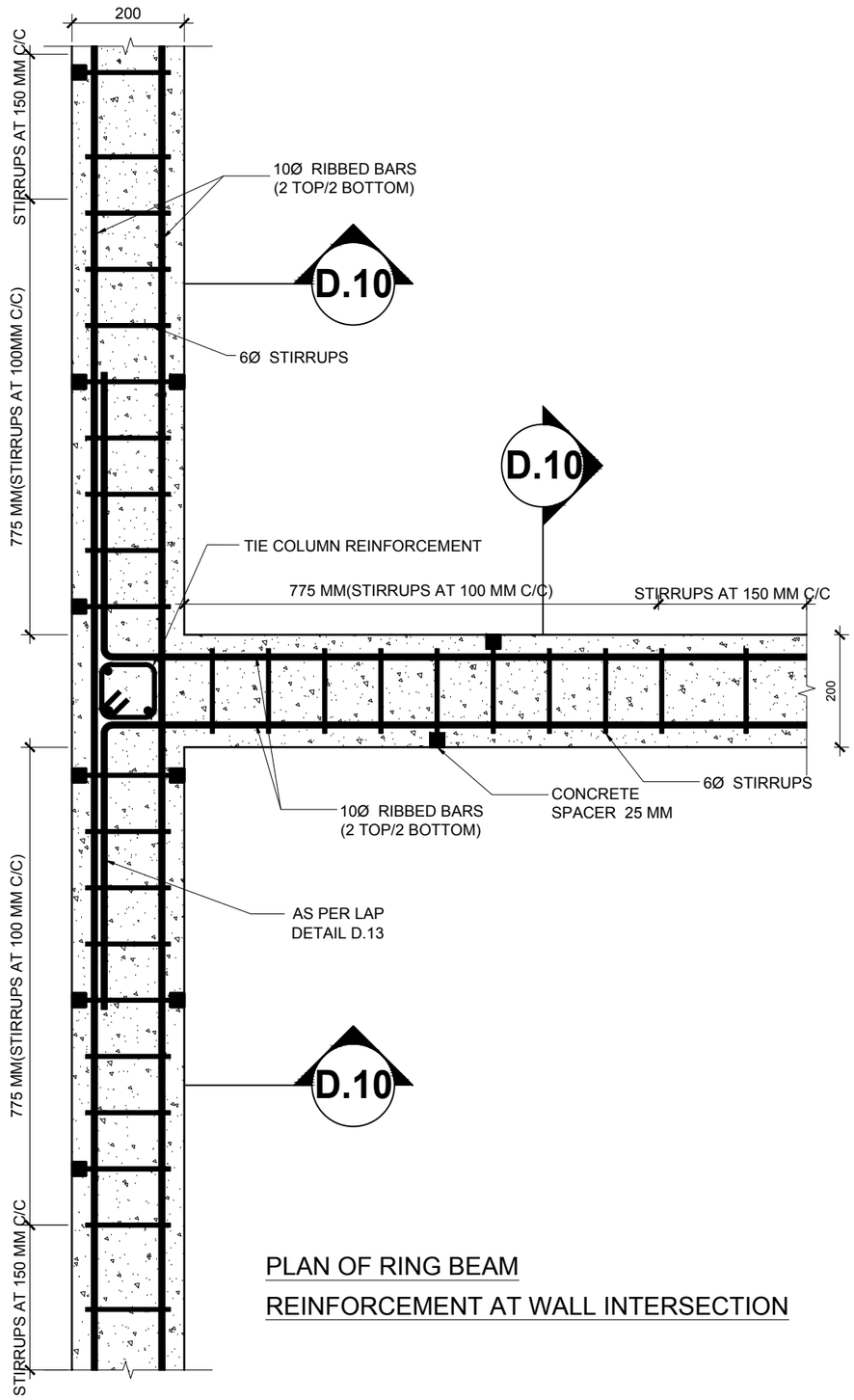
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-11
	DRAWING TITLE: **PLAN SECTION OF SILL/LINTEL AT WALL INTERSECTION AND SECTION**	DESIGNED BY: **BUILD CHANGE**		



SECTION OF RING BEAM REINFORCEMENT
DETAIL AT D.10

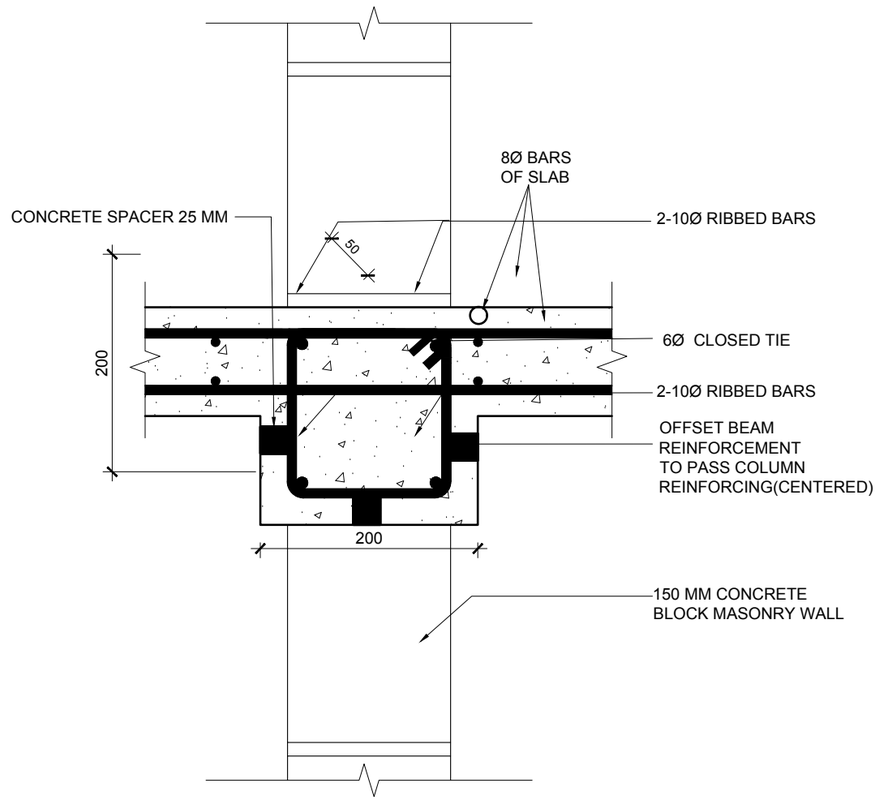


SECTION OF COLUMN AT WALL INTERSECTION

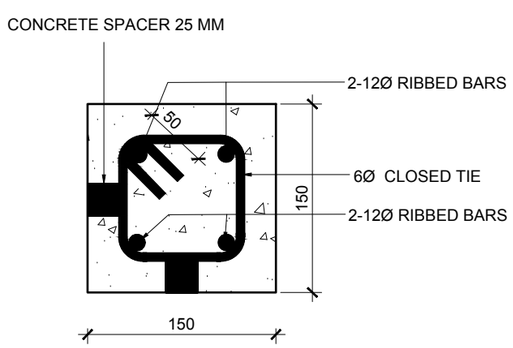


PLAN OF RING BEAM
REINFORCEMENT AT WALL INTERSECTION

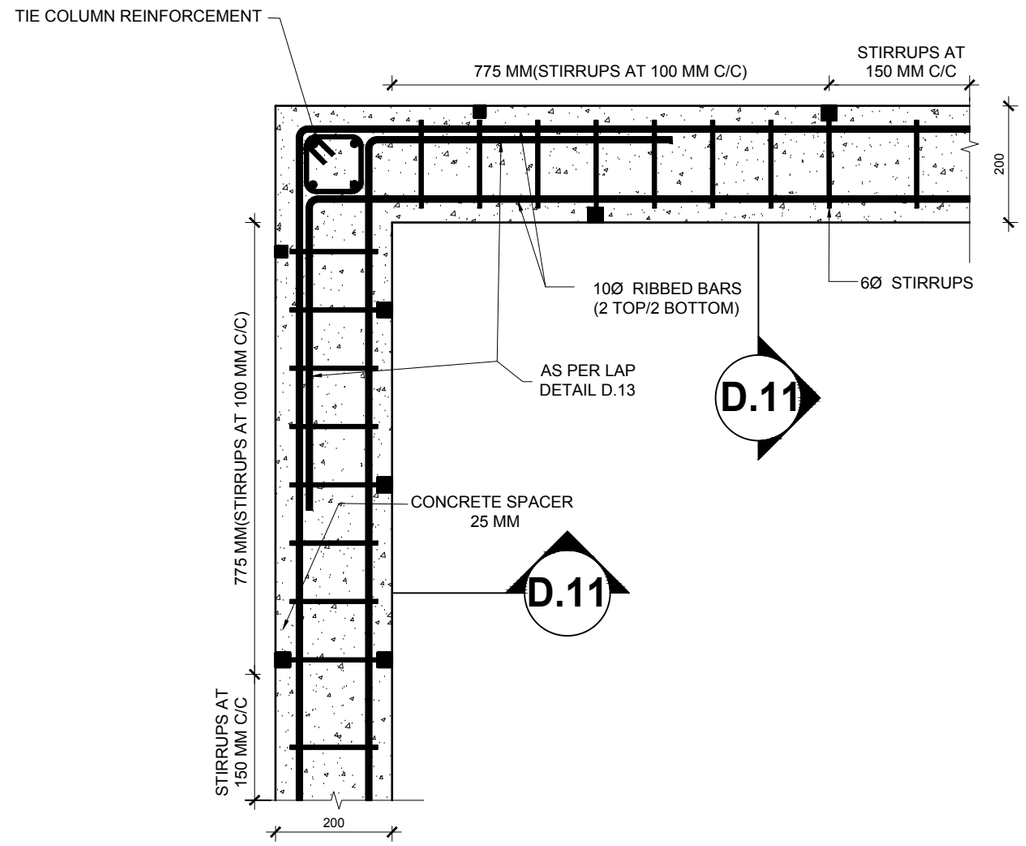
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-12
	DRAWING TITLE: **PLAN SECTION OF RING BEAM AT CORNER AND SECTION**	DESIGNED BY: **BUILD CHANGE**		



SECTION OF RING BEAM REINFORCEMENT
DETAIL AT D.11

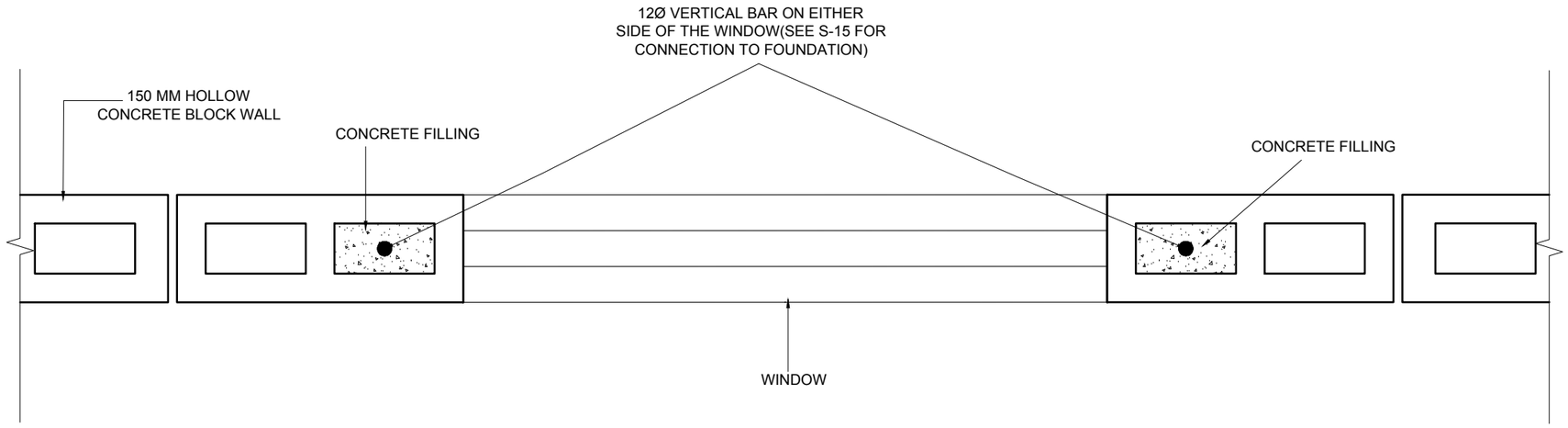


SECTION OF COLUMN AT WALL INTERSECTION



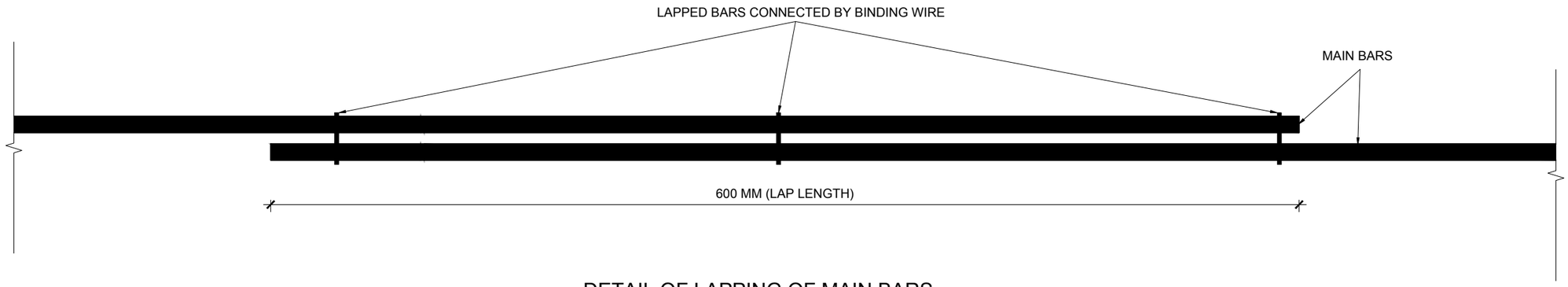
PLAN SECTION OF RING BEAM
REINFORCEMENT AT CORNER

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-13
	DRAWING TITLE: **PLAN SECTION OF RING BEAM AT CORNER AND SECTION**	DESIGNED BY: **BUILD CHANGE**		



DETAIL OF VERTICAL BARS ON EITHER SIDE OF THE WINDOW

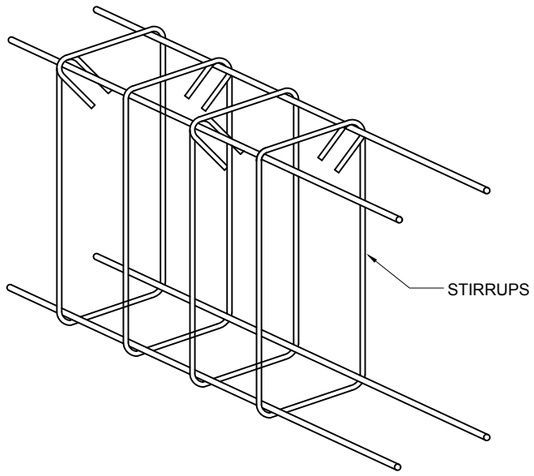
DETAIL D.12



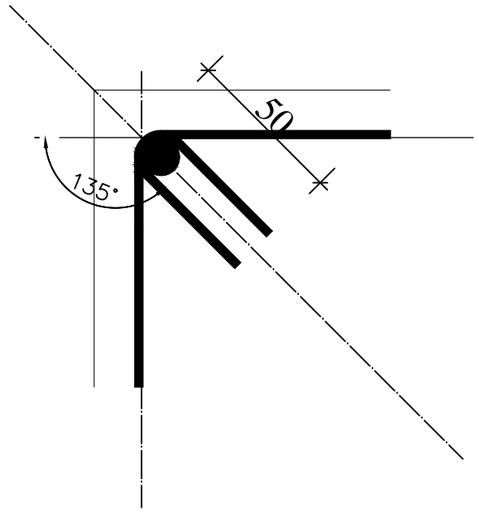
DETAIL OF LAPPING OF MAIN BARS

DETAIL D.13

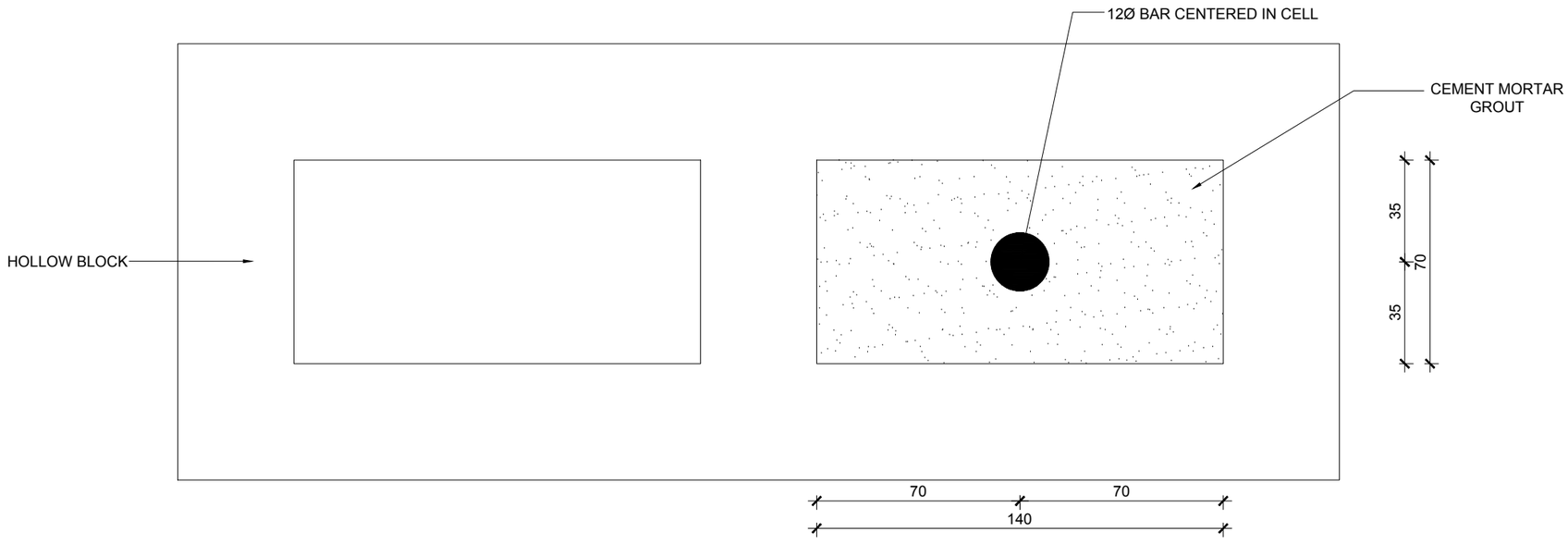
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-14
	DRAWING TITLE: **CONCRETE FILL DETAIL AND LAPPING DETAIL**	DESIGNED BY: **BUILD CHANGE**		



END OF STIRRUPS ARE LOCATED ALTERNATELY
AT TOP CORNER BAR OF THE SECTION

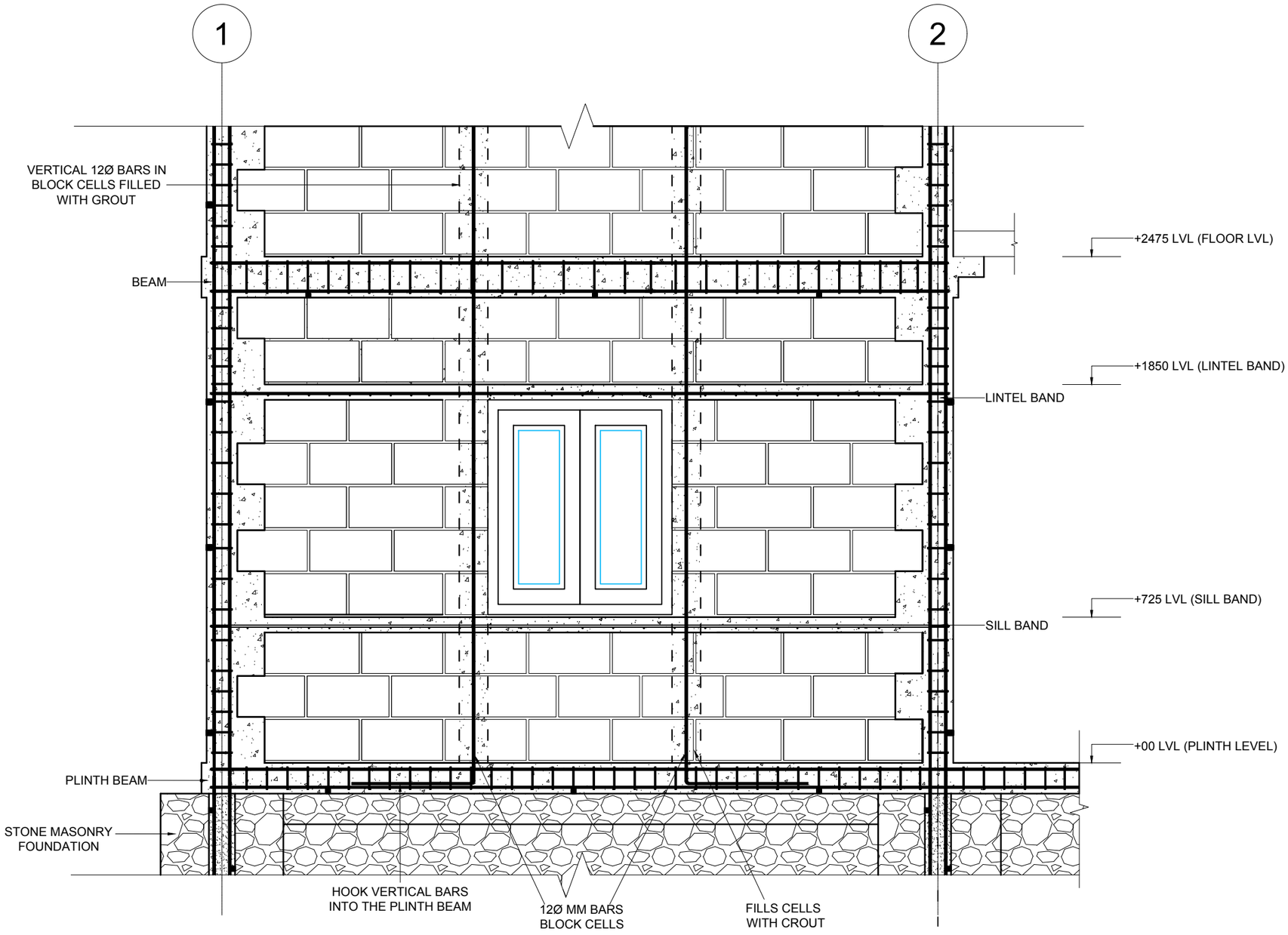


DETAIL C-135 HOOL DETAIL FOR STIRRUPS AND TIES



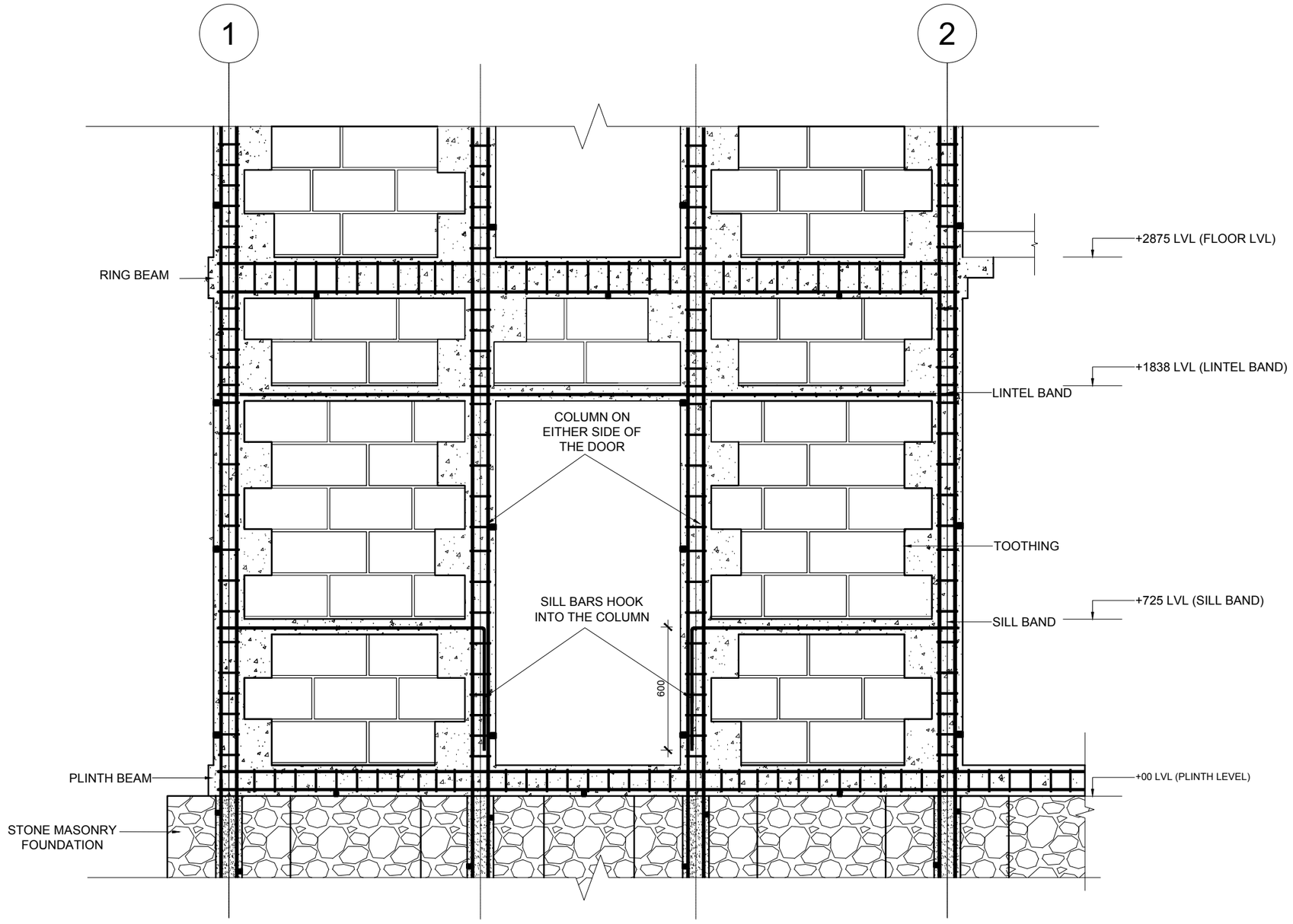
GROUT FILL

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-15
	DRAWING TITLE: **BEAM DETAIL**	DESIGNED BY: **BUILD CHANGE**		



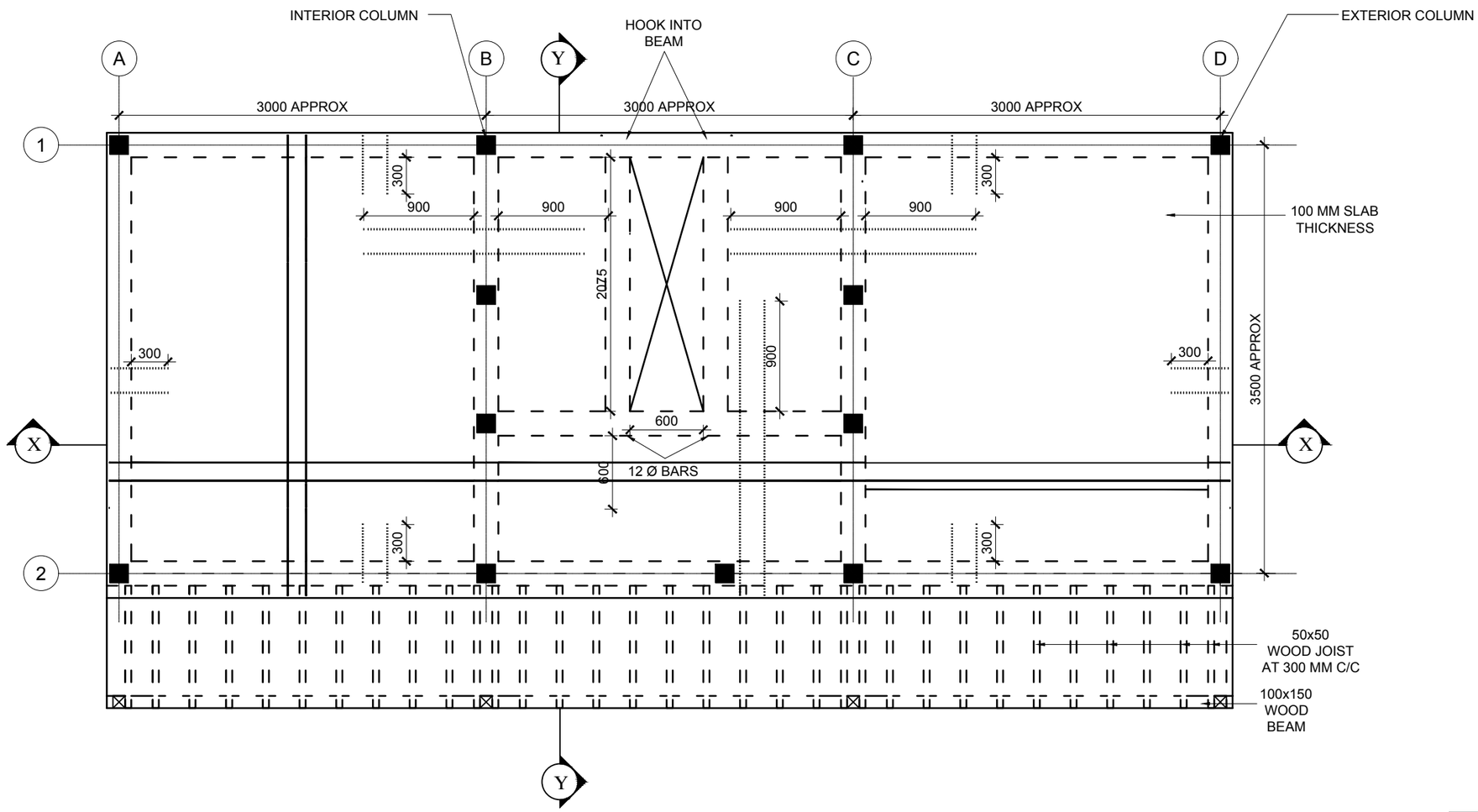
ELEVATION OF WALL WITH WINDOW OPENING

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-16
	DRAWING TITLE: **WALL ON GRID 2 BETN C-D**	DESIGNED BY: **BUILD CHANGE**		



ELEVATION OF WALL WITH DOOR OPENING

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-17
	DRAWING TITLE: **ELEVATION OF WALL WITH DOOR OPENING**	DESIGNED BY: **BUILD CHANGE**		

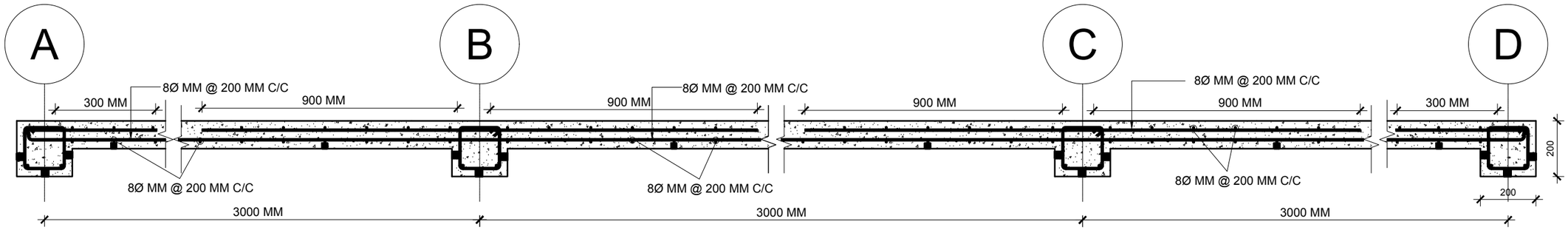


SLAB DETAILING FOR BARS

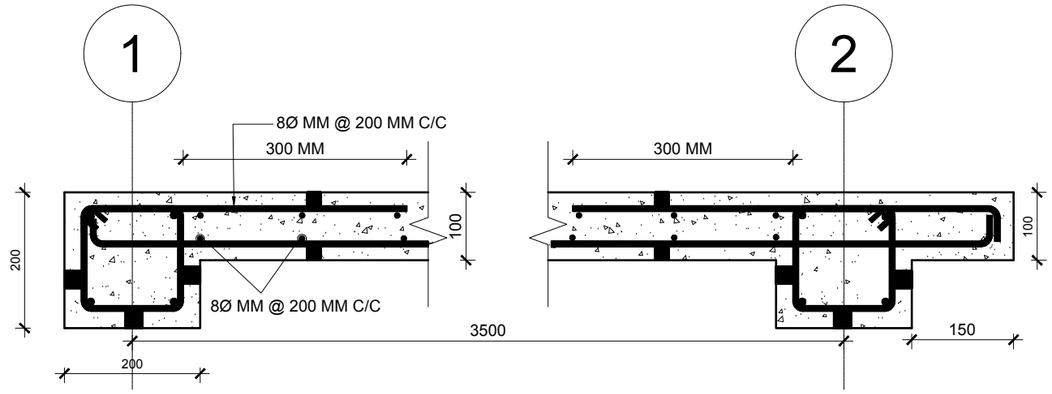
LEGEND

	8 MM Ø TOP BARS AT 200 MM C/C EACH DIRECTION
	8 MM Ø BOTTOM BARS AT 200 MM C/C EACH DIRECTION

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-18
	DRAWING TITLE: **SLAB DETAILING FOR BARS**	DESIGNED BY: **BUILD CHANGE**		



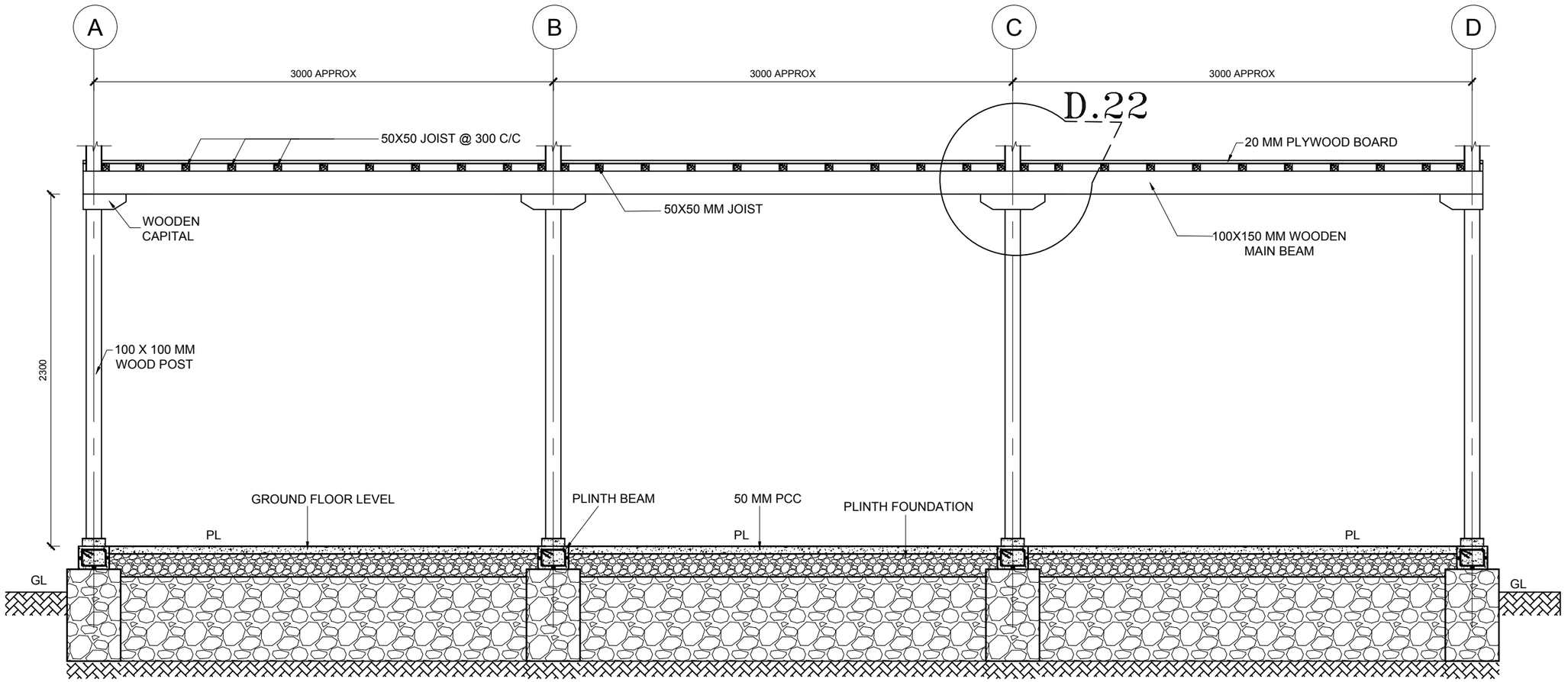
SLAB SECTION AT X-X



SLAB SECTION AT Y-Y

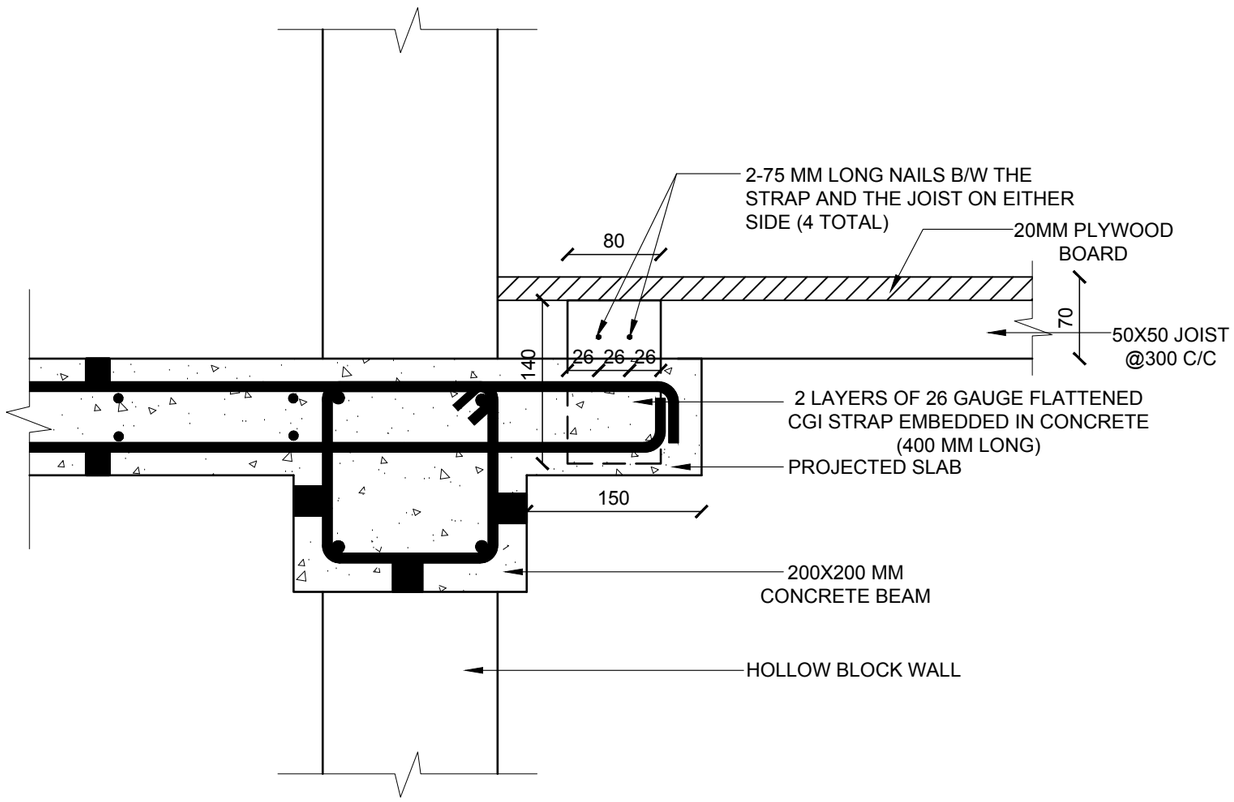
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	S-19
	DRAWING TITLE: **FLOOR BEAM SECTION**	DESIGNED BY: **BUILD CHANGE**		

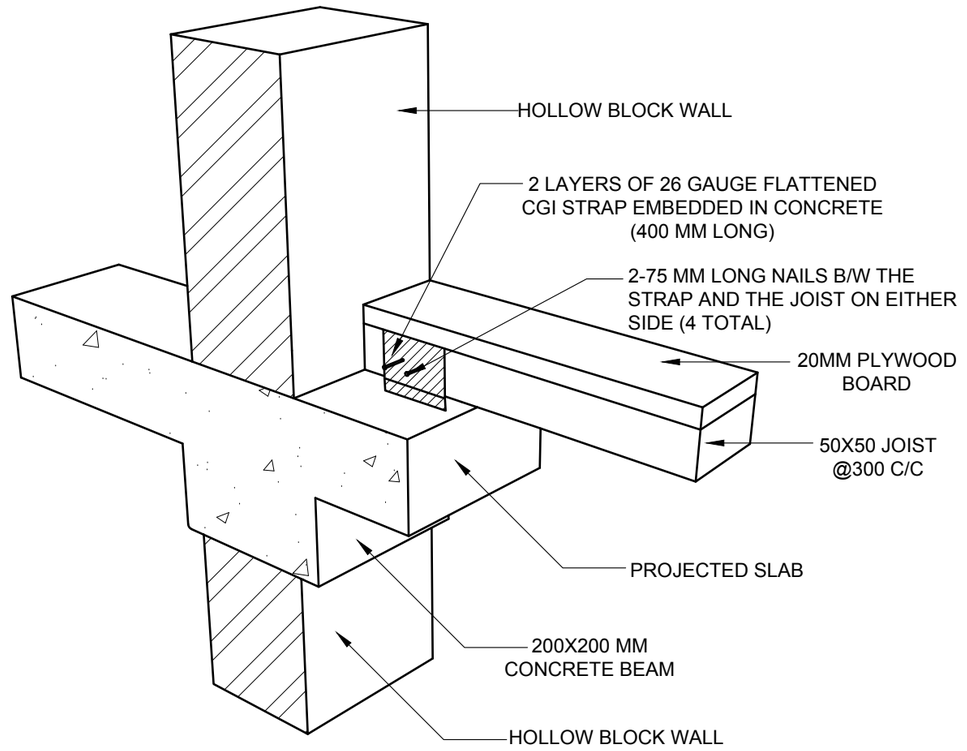
TIMBER DETAILS



ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	P-01
	DRAWING TITLE: **PORCH DETAILS**	DESIGNED BY: **BUILD CHANGE**		





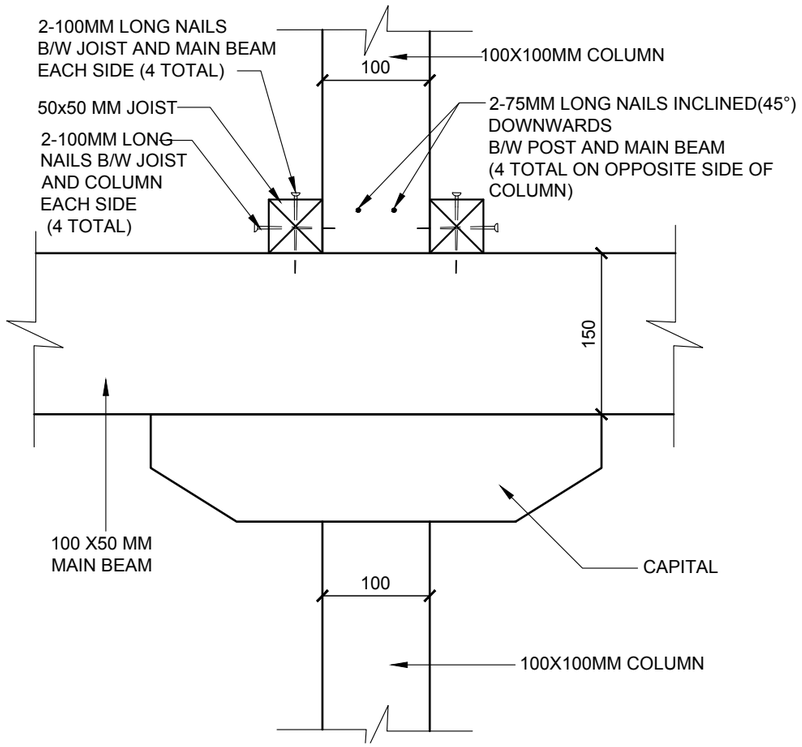
3D VIEW OF CONNECTION

DETAIL AT D.21

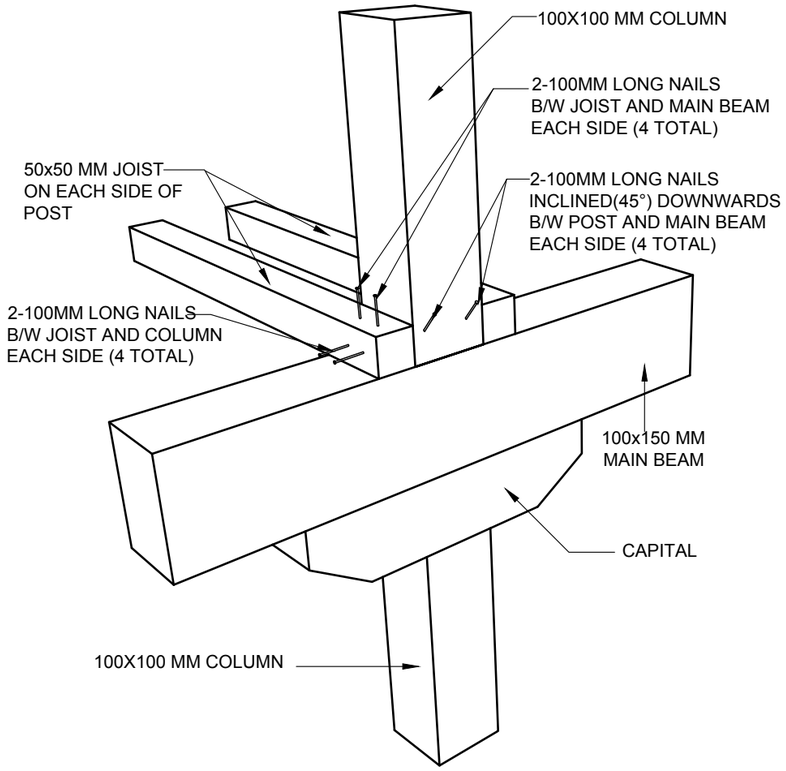
CONNECTION DETAIL OF BEAM WITH PORCH JOIST AT GROUND FLOOR

ALL DIMENSIONS IN MM

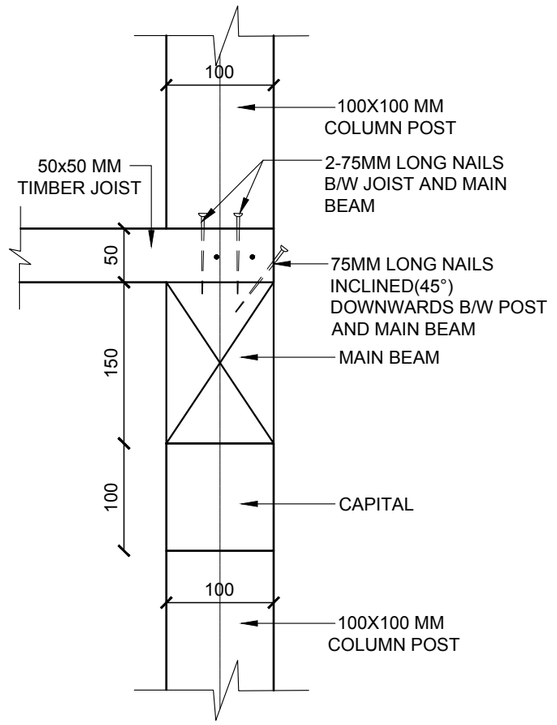
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	P-02
	DRAWING TITLE: **PORCH DETAILS**	DESIGNED BY: **BUILD CHANGE**		



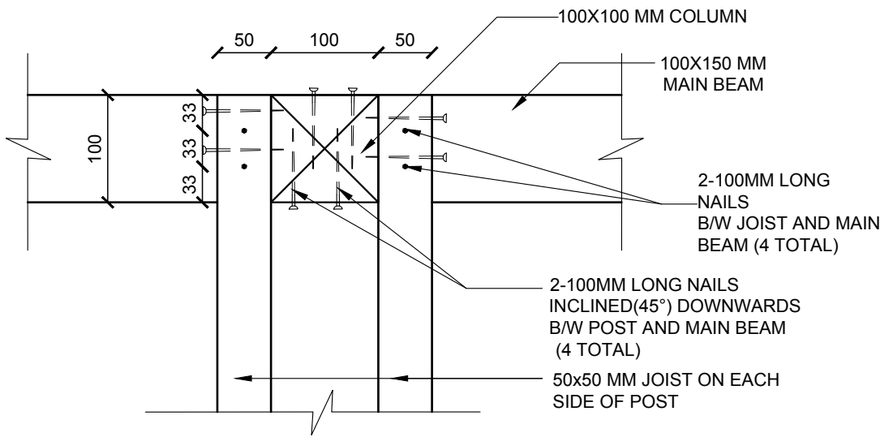
FRONT ELEVATION



3D VIEW OF CONNECTION



SIDE ELEVATION



PLAN

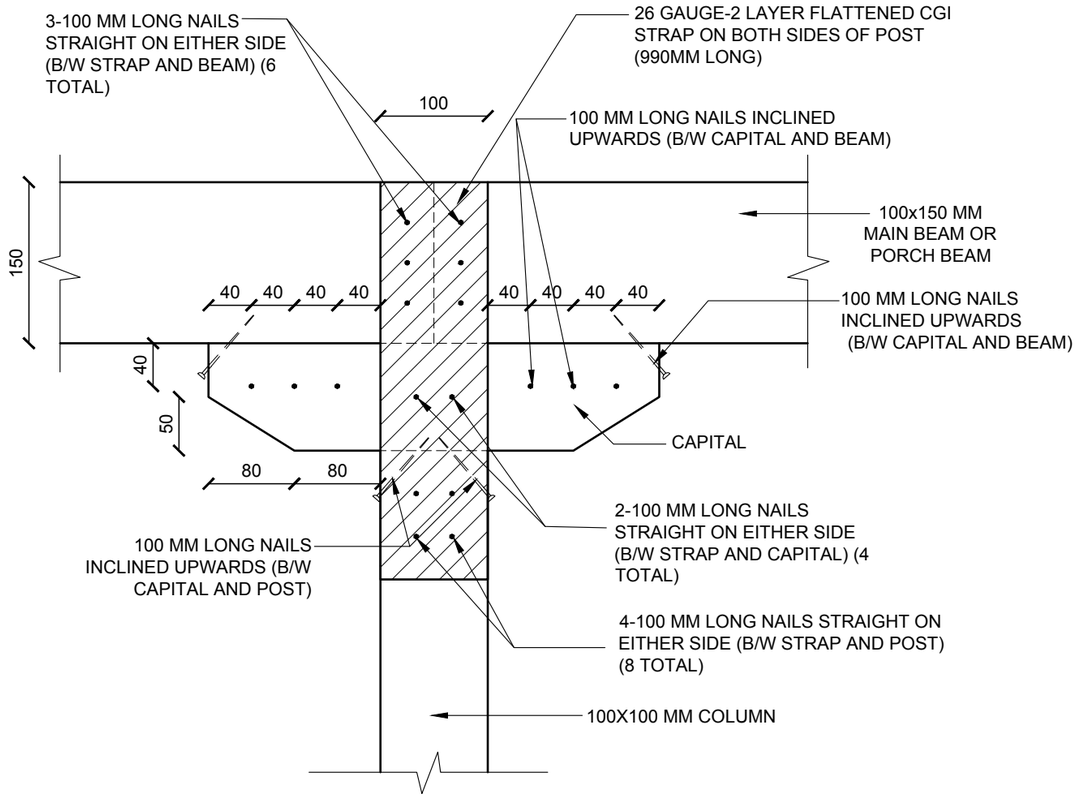
DETAIL AT D.22

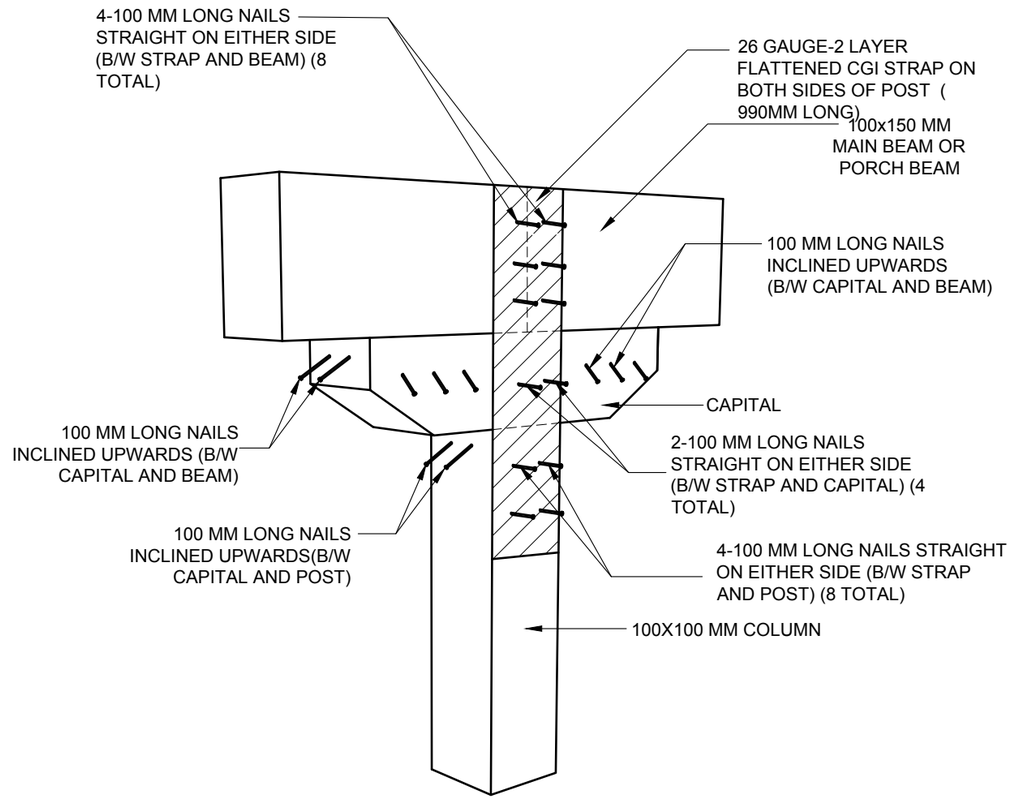
CONNECTION DETAIL OF COLUMN WITH MAIN BEAM

ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	P-03
	DRAWING TITLE: **PORCH DETAILS**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK **DOUBLE-STORY**





DETAIL AT D.21

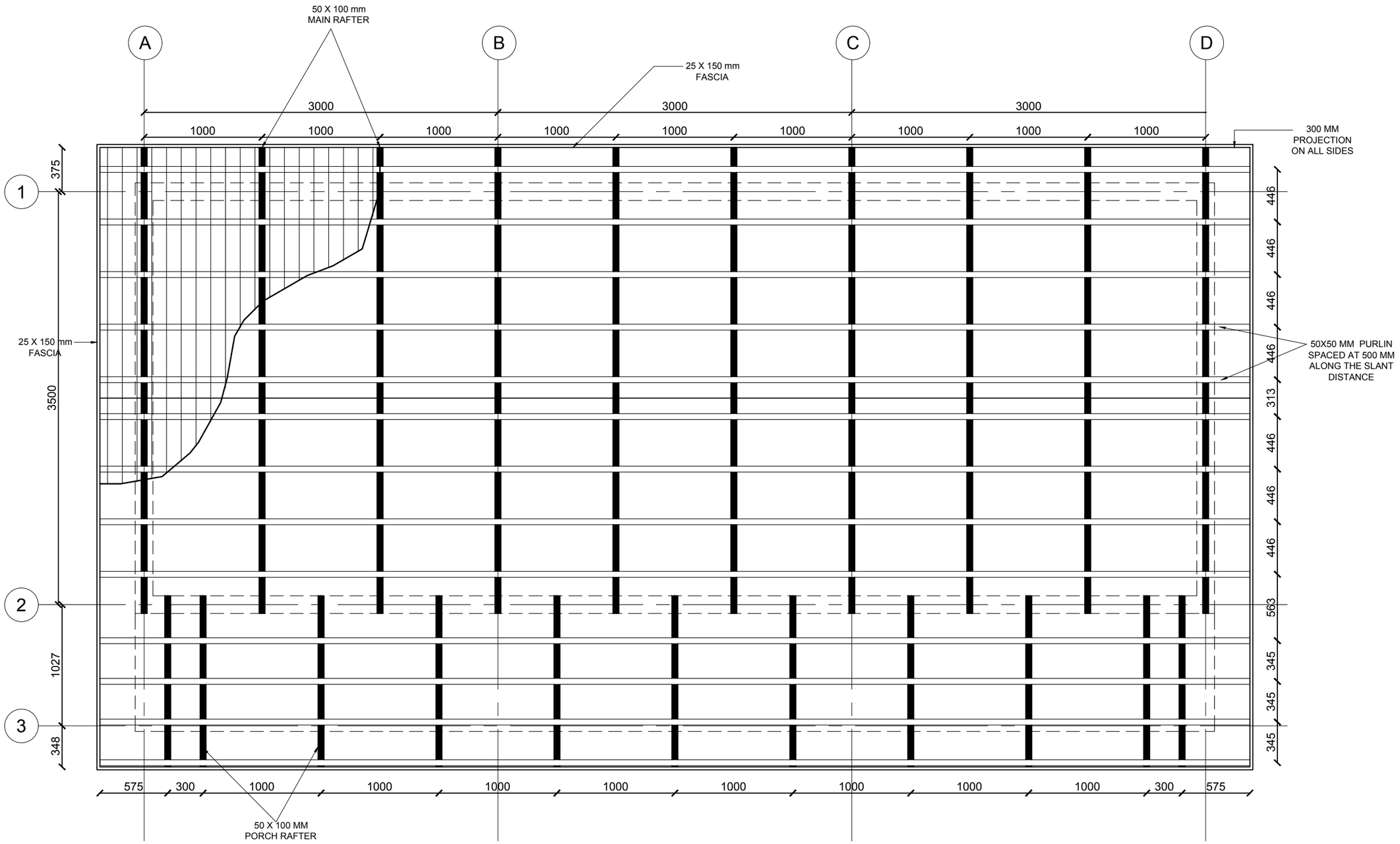
CONNECTION DETAIL OF CAPITAL WITH MAIN BEAM

ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: **1:50**	DATE: SEPT , 2016	P-04
	DRAWING TITLE: **PORCH DETAILS**	DESIGNED BY: **BUILD CHANGE**		

TIMBER TRUSS DRAWINGS

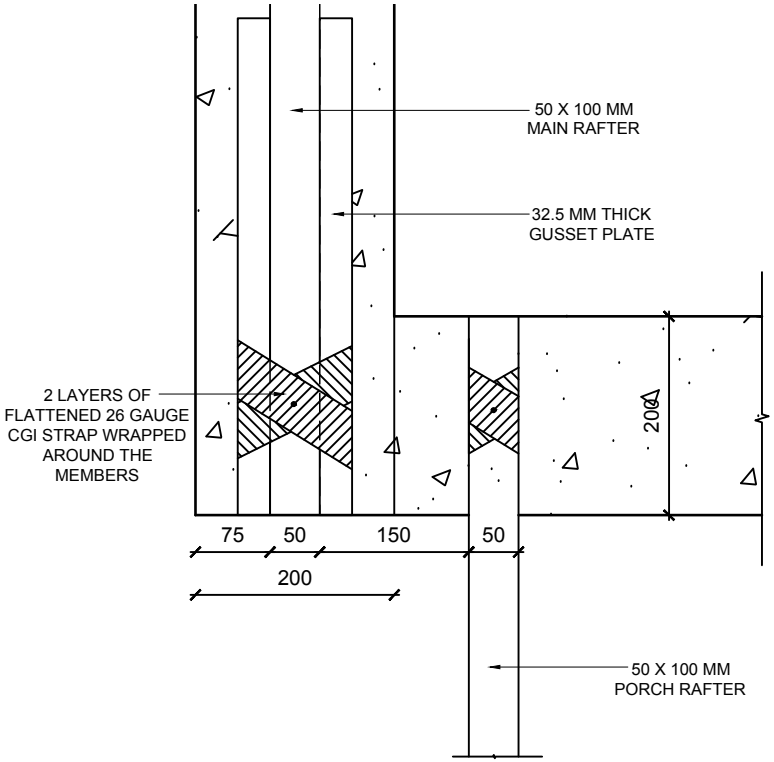
MODEL HOLLOW CONCRETE BLOCK **DOUBLE-STORY**

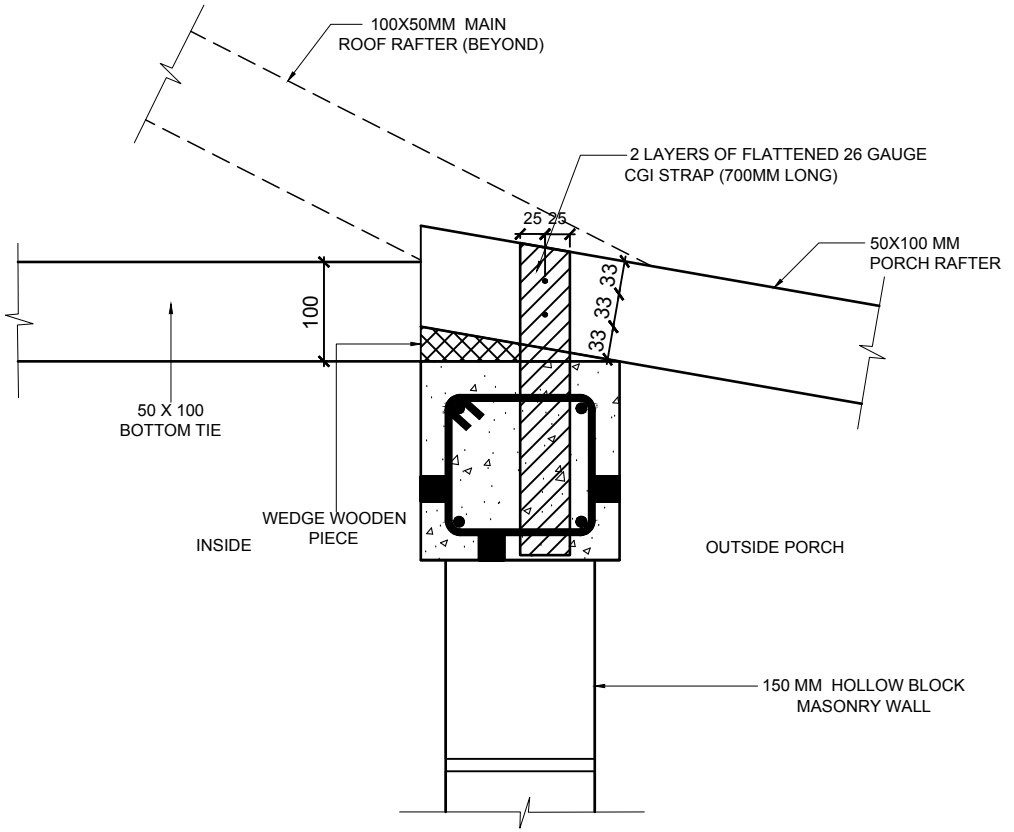


ROOF FRAMING PLAN

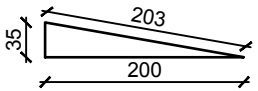
ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-01
	DRAWING TITLE: **ROOF FRAMING PLAN**	DESIGNED BY: **BUILD CHANGE**		





SECTION AT B1-B1

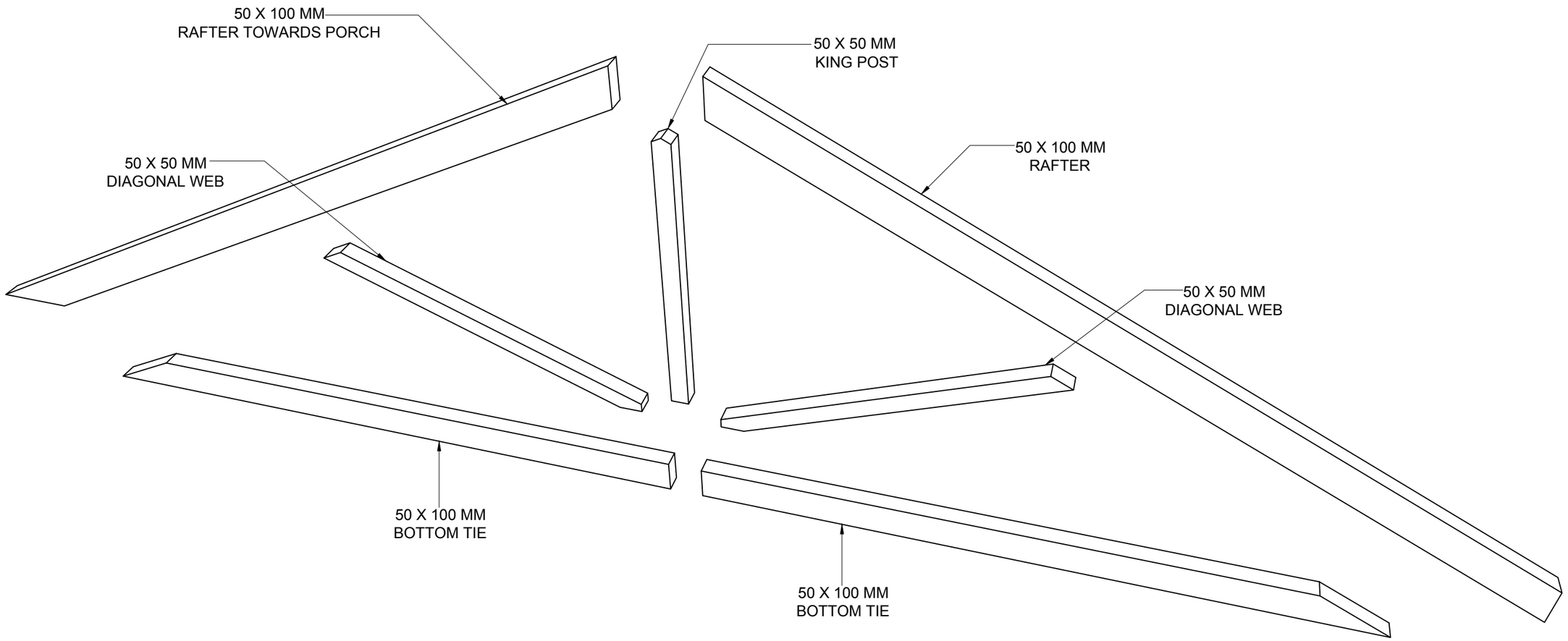


DETAIL OF WEDGE WOODEN PIECE

CONNECTION OF PORCH RAFTER AND FLOOR BEAM

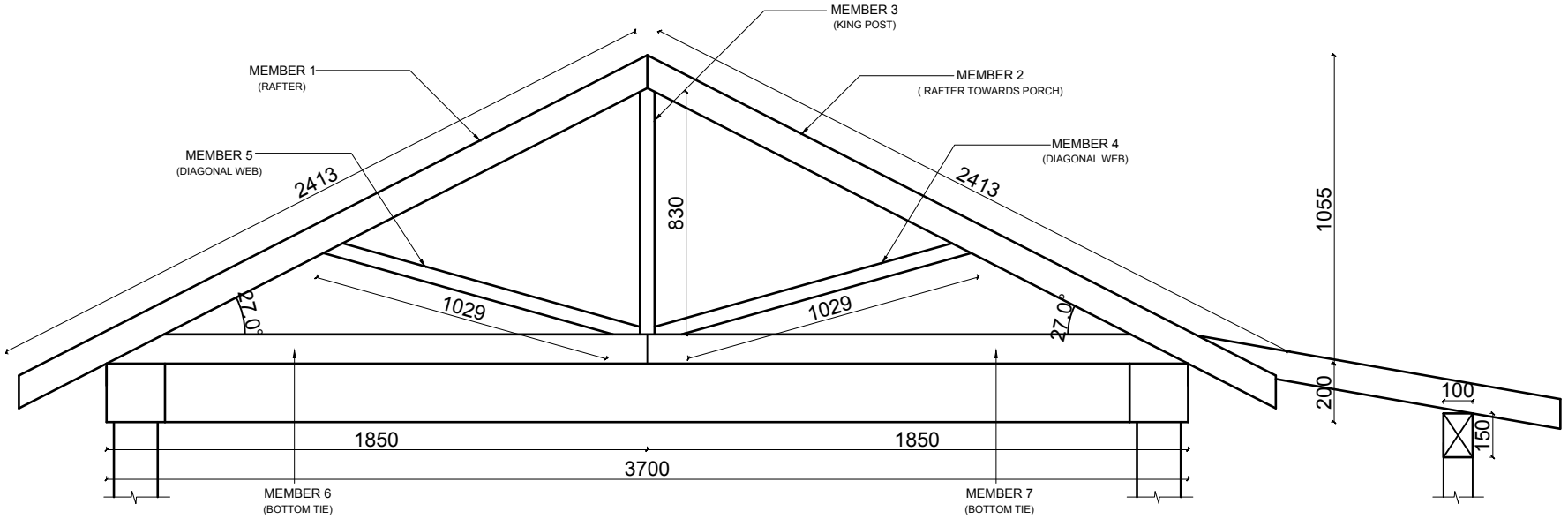
ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-02
	DRAWING TITLE: **DETAIL OF CONNECTIONS**	DESIGNED BY: **BUILD CHANGE**		



EXPLODED ROOF TRUSS 3D VIEW

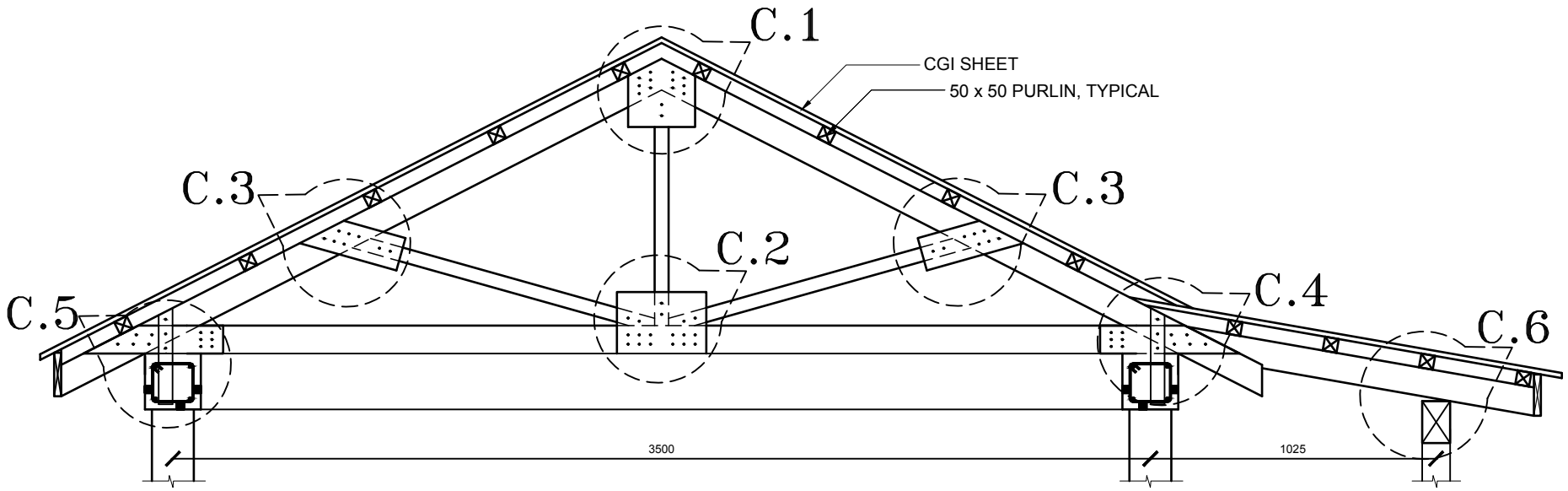
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-03
	DRAWING TITLE: **DETAIL OF ROOF TRUSS**	DESIGNED BY: **BUILD CHANGE**		



MEASUREMENT OF ROOM MEMBERS

ALL DIMENSIONS IN MM

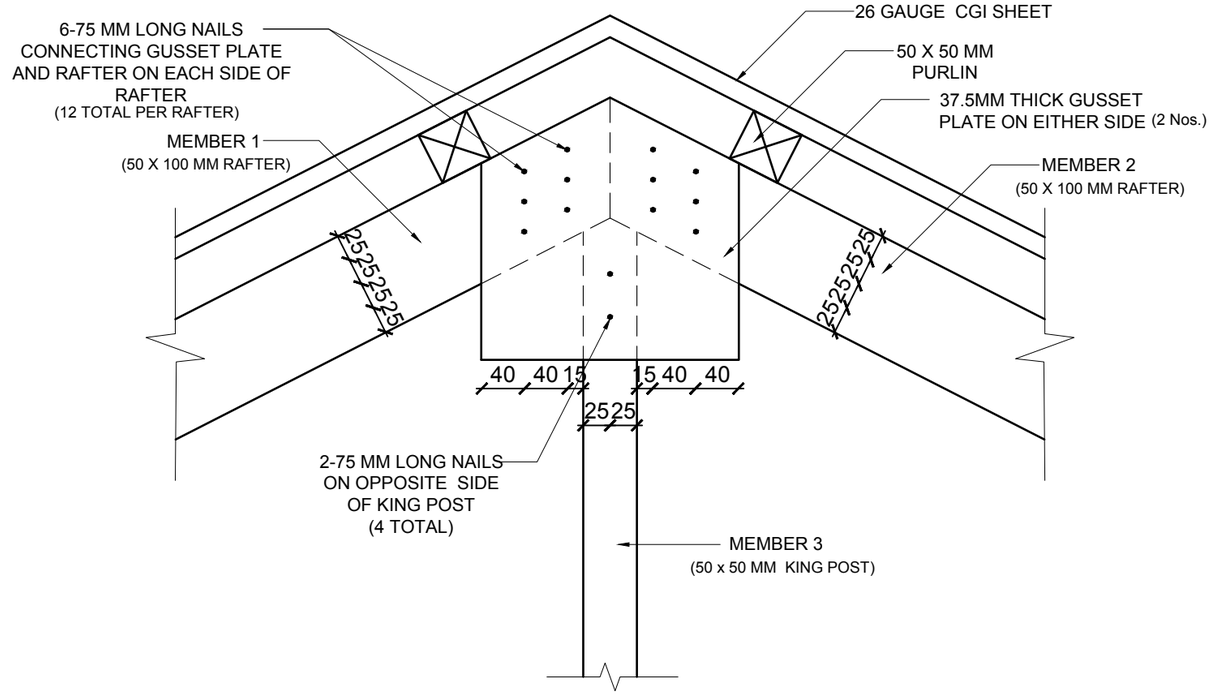
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-04
	DRAWING TITLE: **DETAIL OF ROOF TRUSS**	DESIGNED BY: **BUILD CHANGE**		



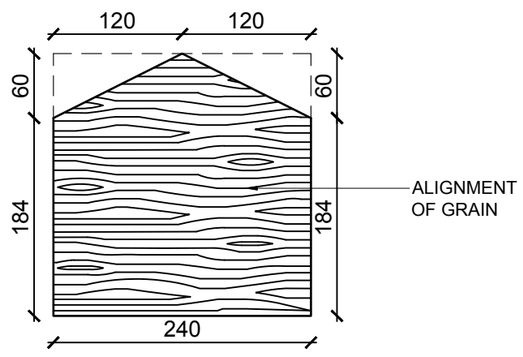
ROOF TRUSS ELEVATION WITH GUSSET PLATE

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-05
	DRAWING TITLE: **DETAIL OF ROOF TRUSS**	DESIGNED BY: **BUILD CHANGE**		

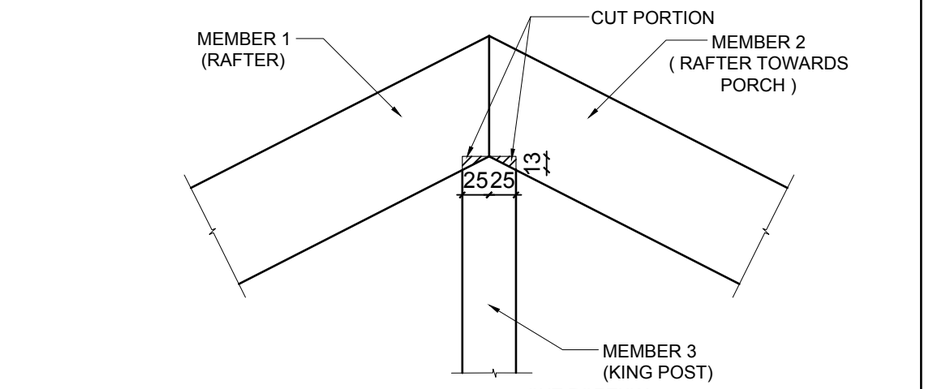
MODEL HOLLOW CONCRETE BLOCK **DOUBLE-STORY**



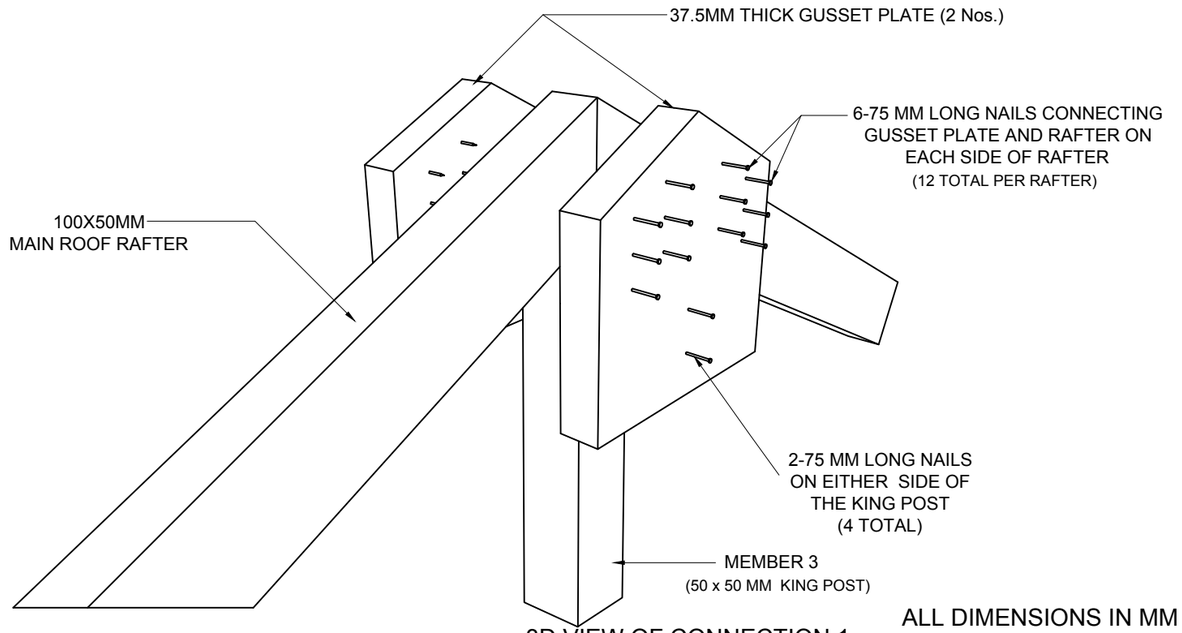
DETAIL AT CONNECTION 1



DETAIL OF GUSSET PLATE AT CONNECTION 1 (2 Nos.)



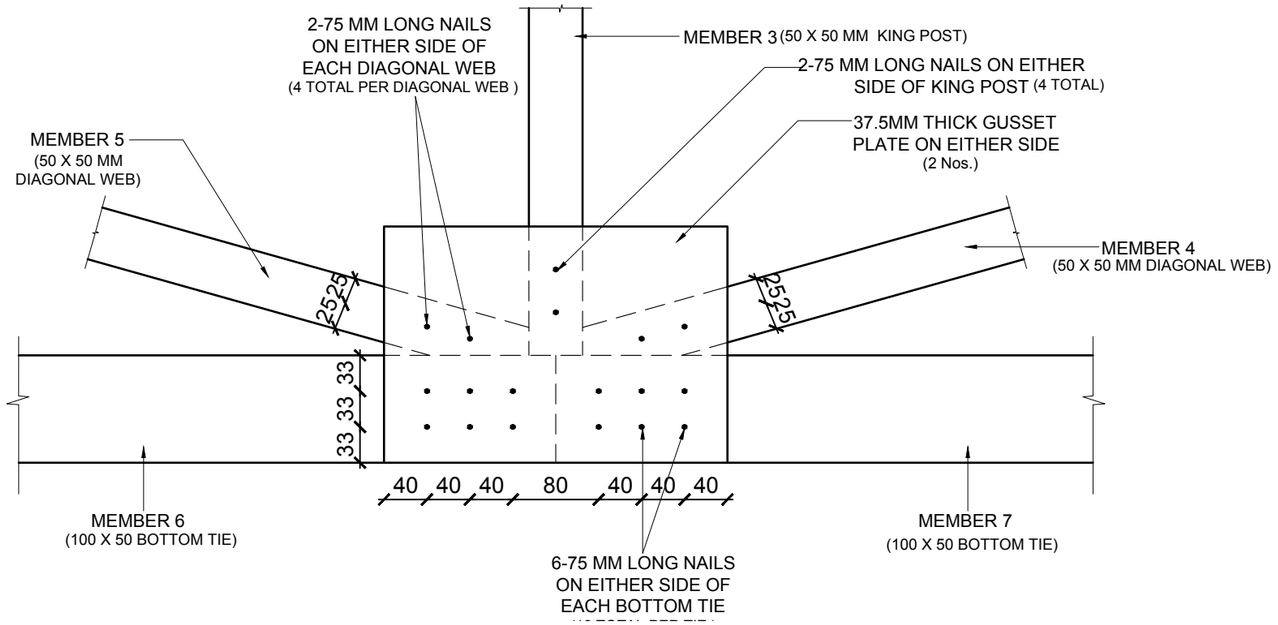
DETAIL OF JOINTS AT CONNECTION 1



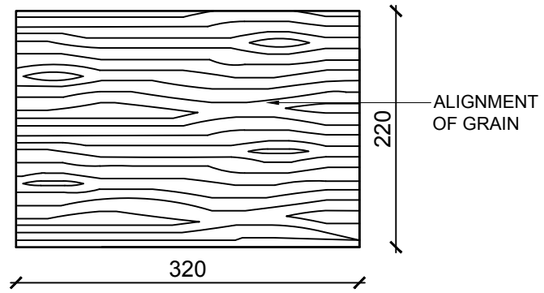
3D VIEW OF CONNECTION 1

ALL DIMENSIONS IN MM

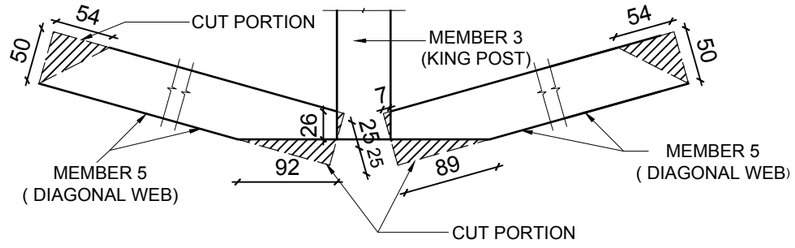
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-06
	DRAWING TITLE: **DETAIL OF CONNECTIONS**	DESIGNED BY: **BUILD CHANGE**		



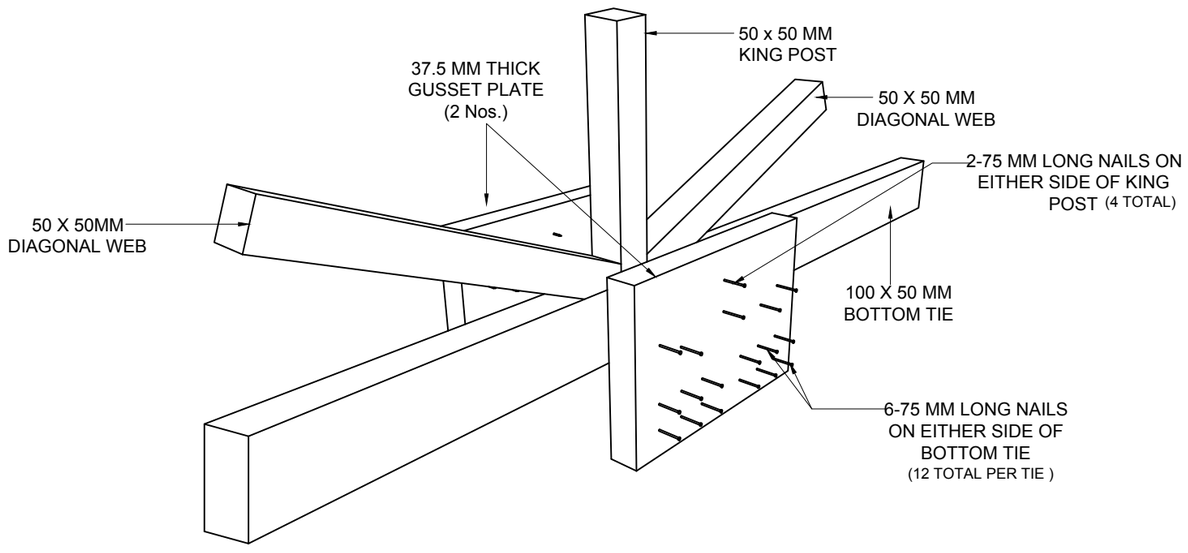
DETAIL AT CONNECTION 2



DETAIL OF GUSSET PLATE



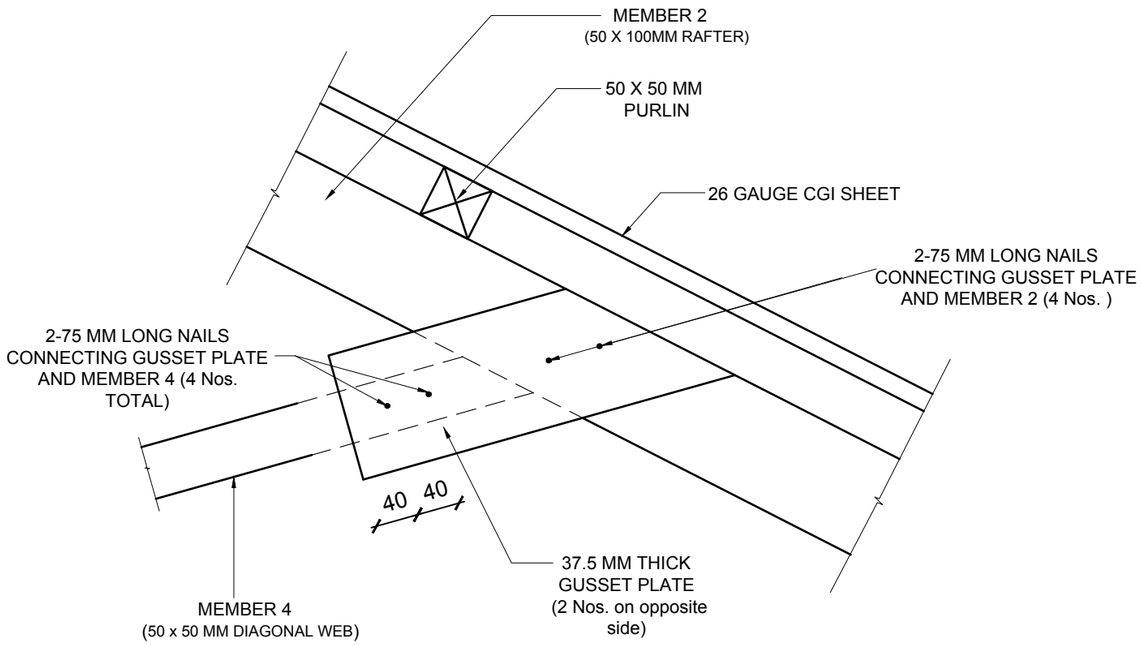
DETAIL OF JOINTS AT CONNECTION 2



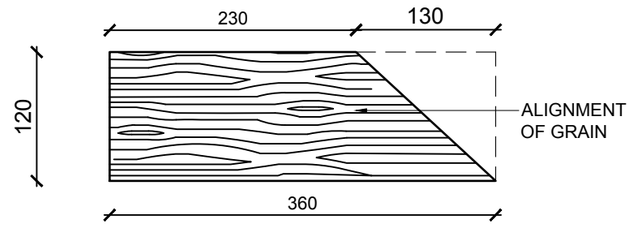
3DVIEW OF CONNECTION 2

ALL DIMENSIONS IN MM

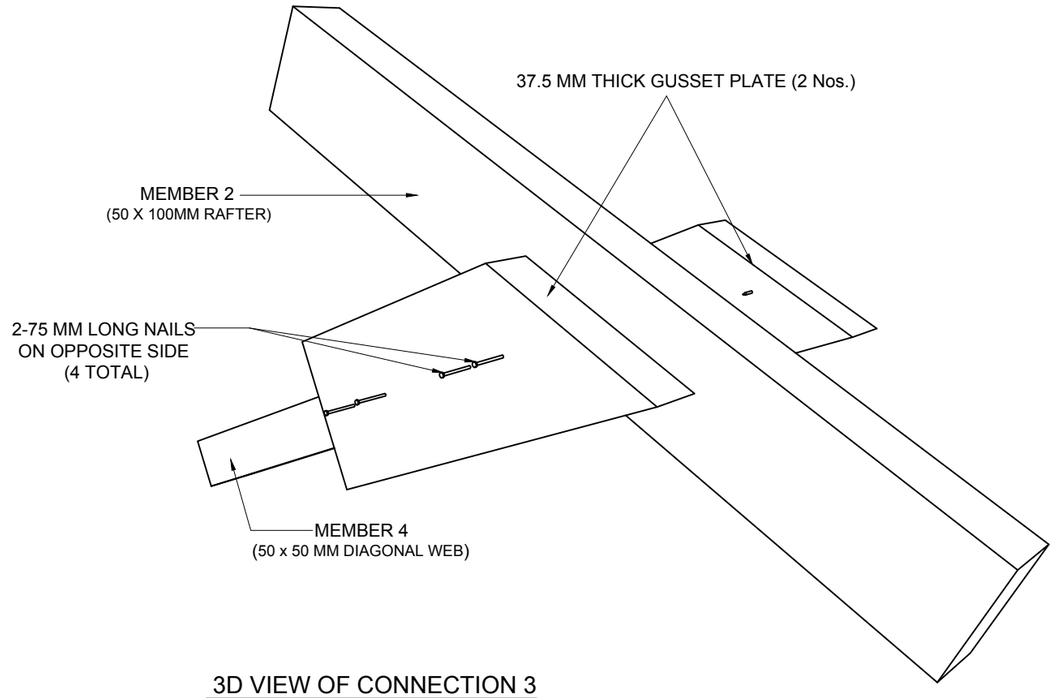
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-07
	DRAWING TITLE: **DETAIL OF CONNECTIONS**	DESIGNED BY: **BUILD CHANGE**		



DETAIL AT CONNECTION 3



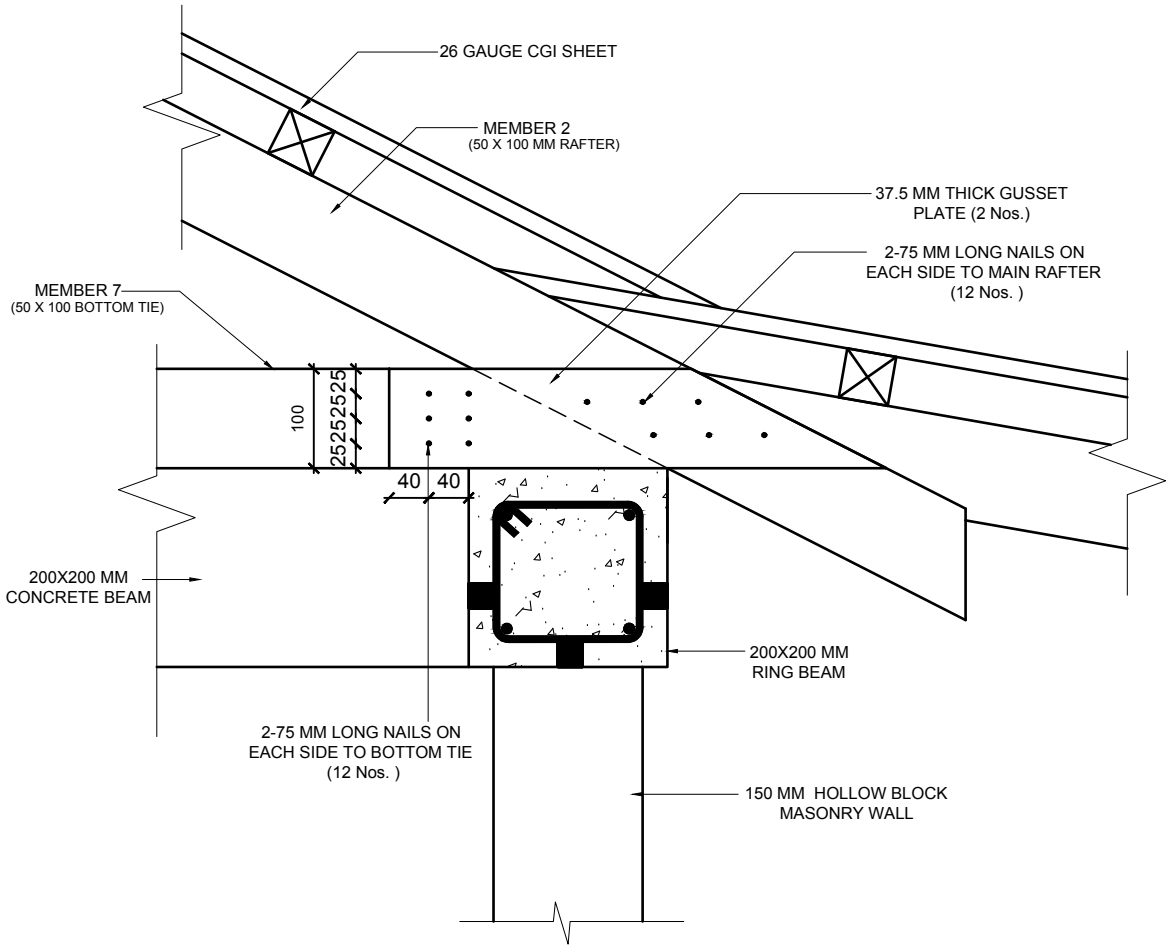
DETAIL OF GUSSET PLATE (2 Nos.)



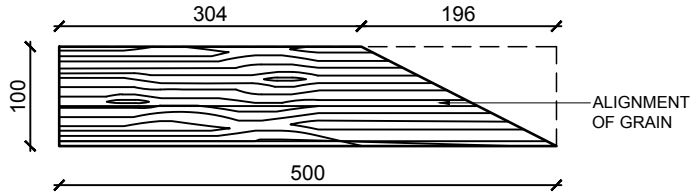
3D VIEW OF CONNECTION 3

ALL DIMENSIONS IN MM

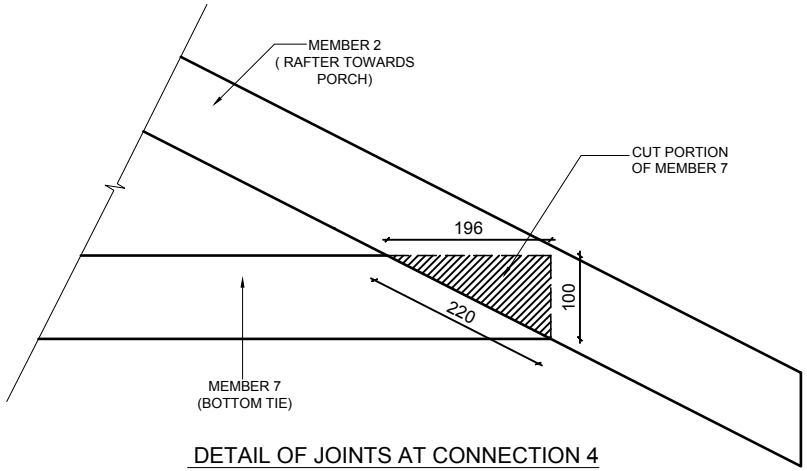
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-08
	DRAWING TITLE: **DETAIL OF CONNECTIONS**	DESIGNED BY: **BUILD CHANGE**		



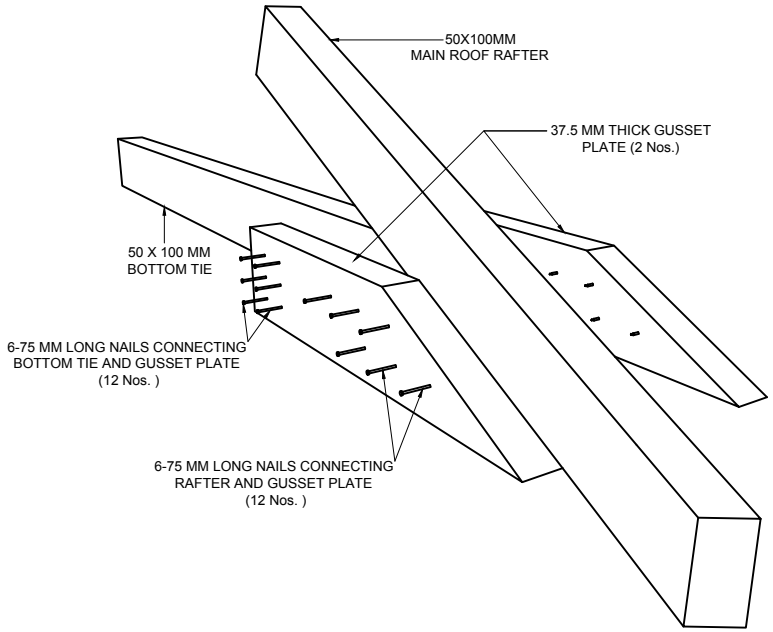
DETAIL AT CONNECTION 4



DETAIL OF GUSSET PLATE



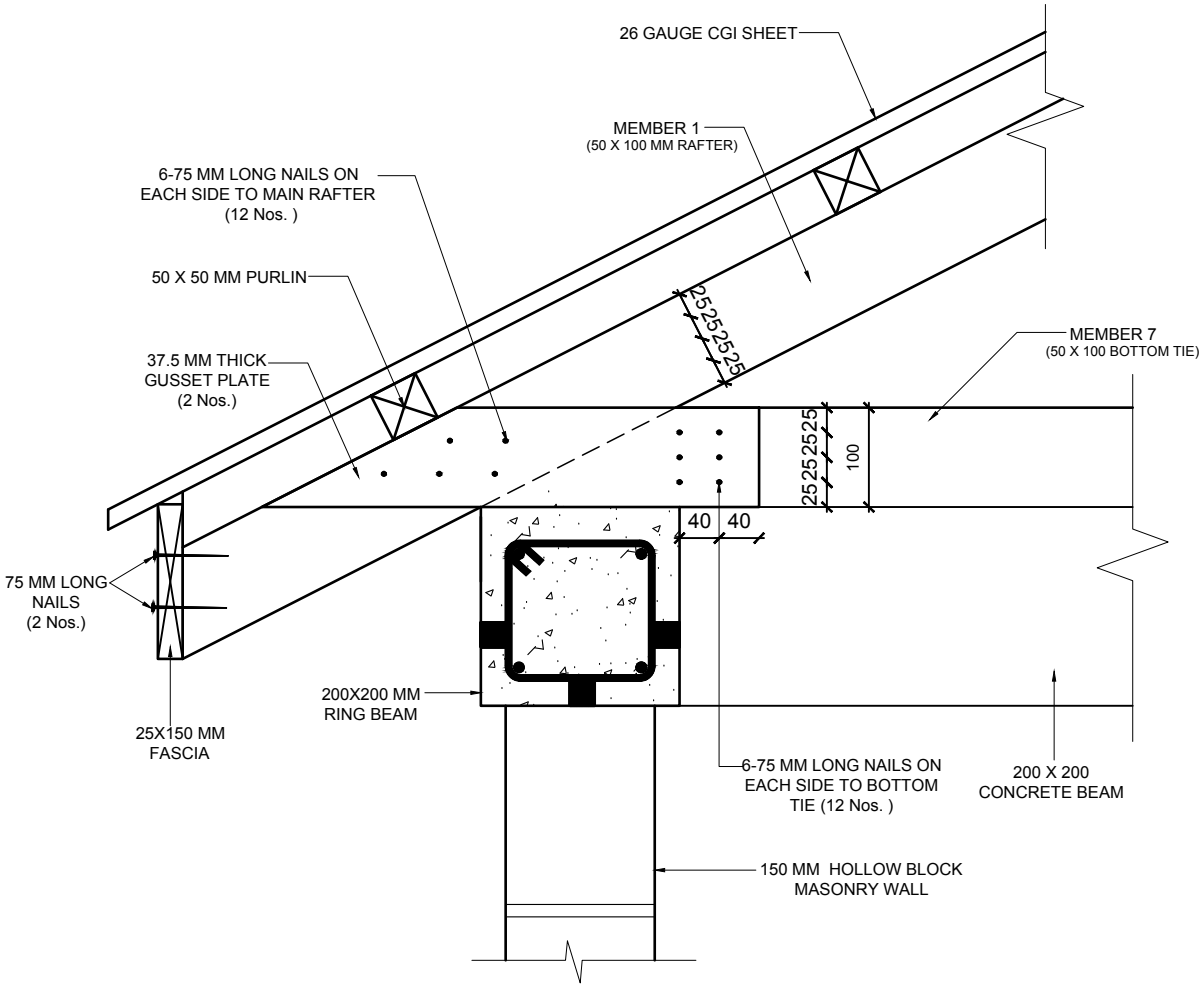
DETAIL OF JOINTS AT CONNECTION 4



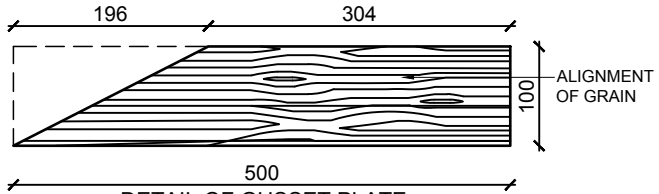
3D VIEW OF CONNECTION 4

ALL DIMENSIONS IN MM

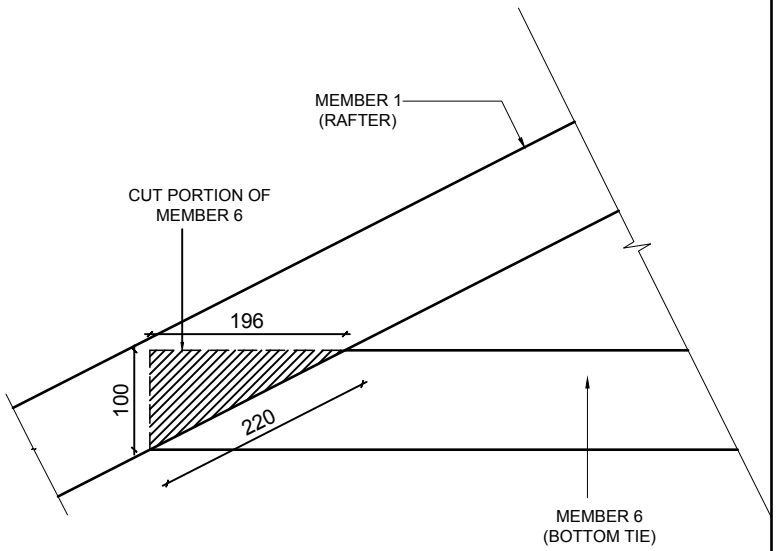
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016
	DRAWING TITLE: **DETAIL OF CONNECTIONS**	DESIGNED BY: **BUILD CHANGE**	T-09



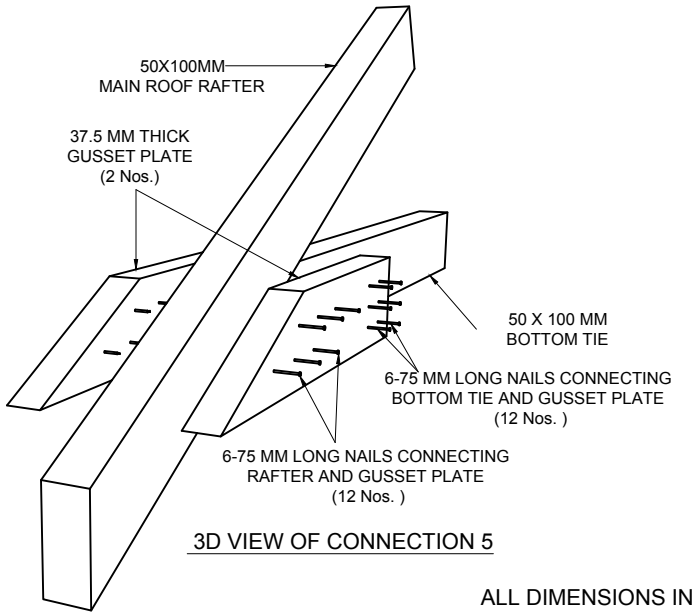
DETAIL AT CONNECTION 5



DETAIL OF GUSSET PLATE



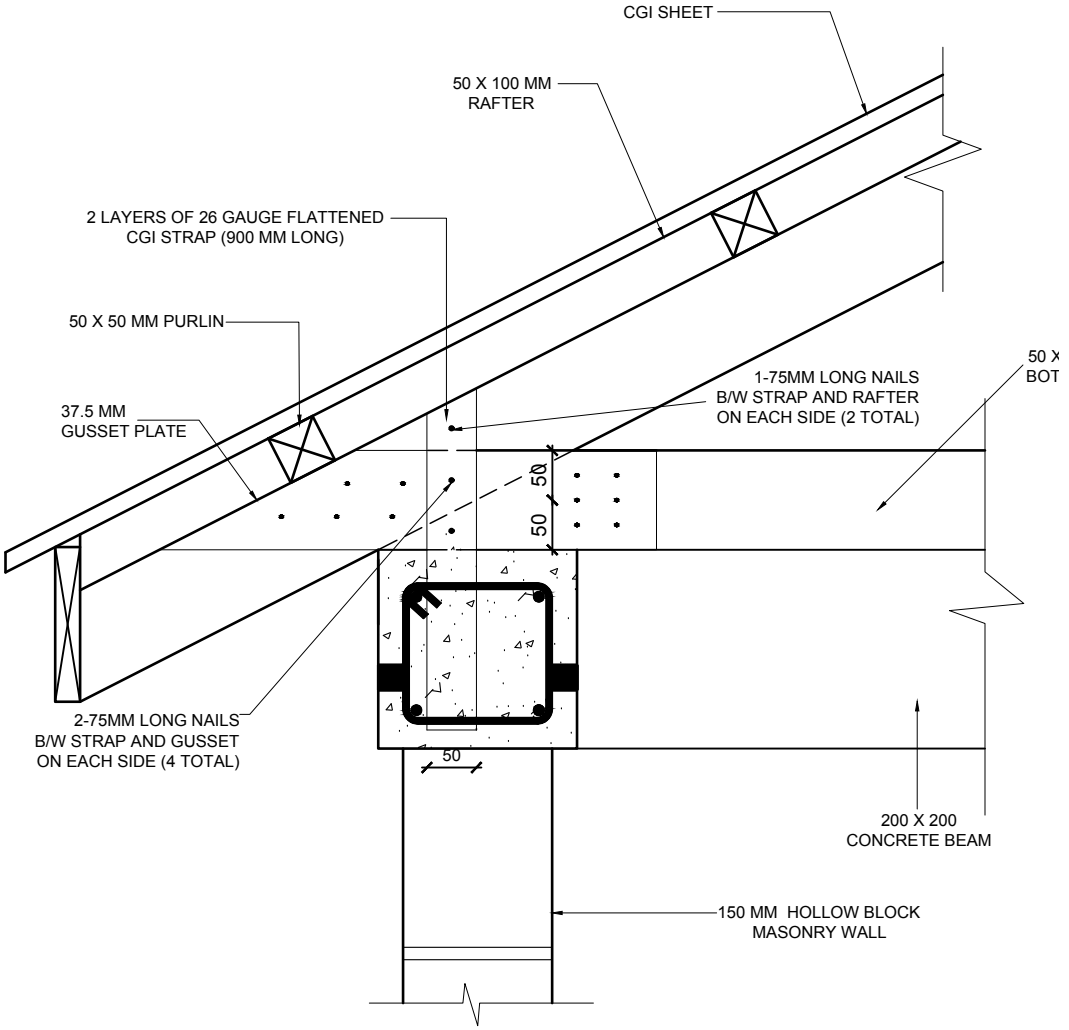
DETAIL OF JOINTS AT CONNECTION 5



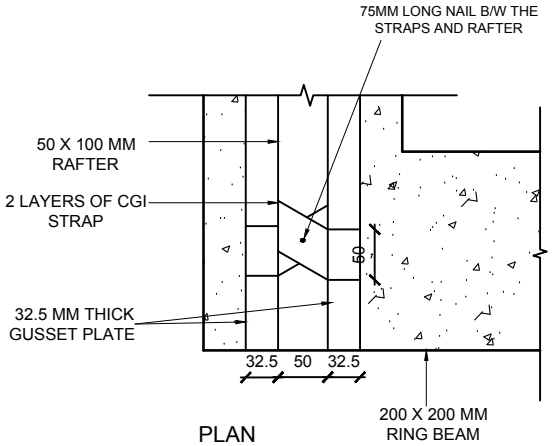
3D VIEW OF CONNECTION 5

ALL DIMENSIONS IN MM

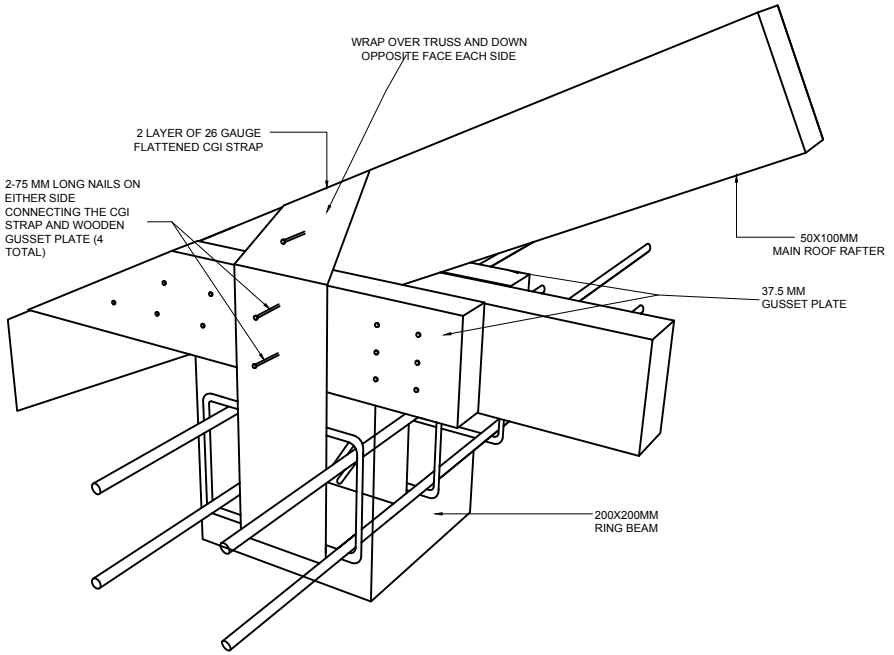
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-10
	DRAWING TITLE: **DETAIL OF CONNECTIONS**	DESIGNED BY: **BUILD CHANGE**		



DETAIL OF CGI STRAP



PLAN



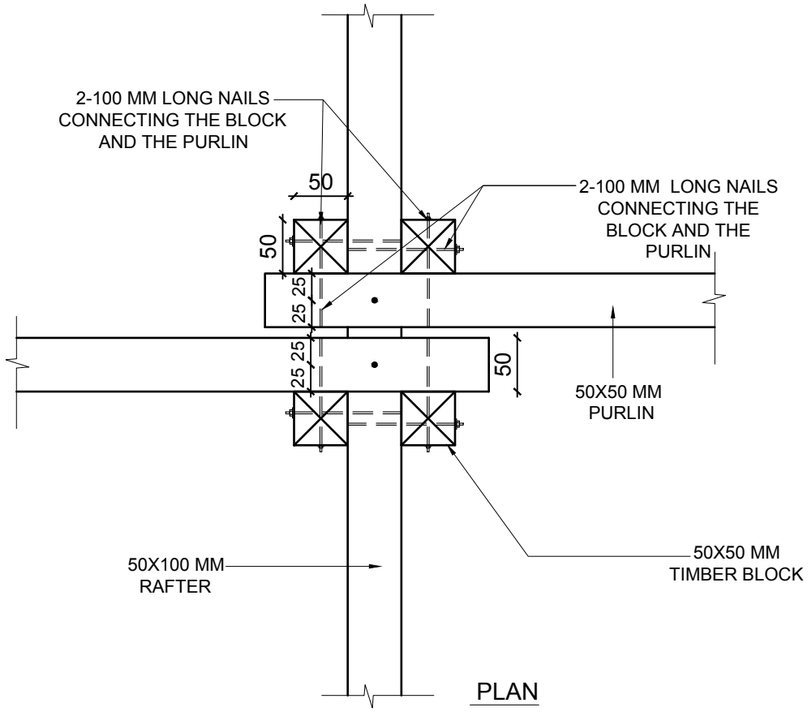
3D VIEW OF CGI STRAP CONNECTION

TOTAL LENGTH OF 10MM STRAP IN TWO LAYERS = 1055 MM

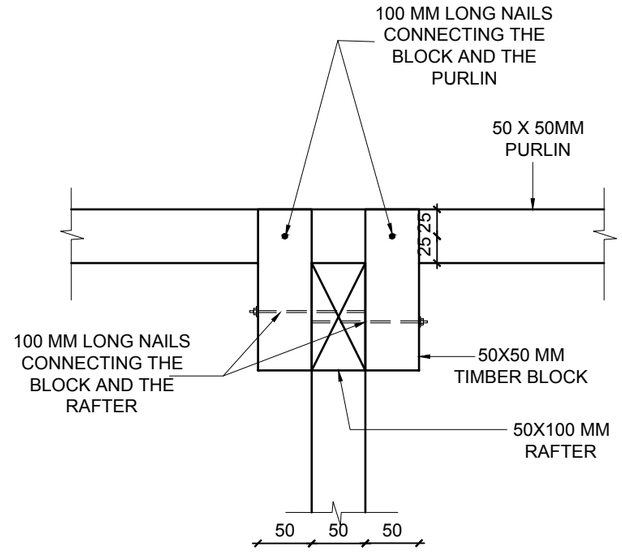
ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-11
	DRAWING TITLE: **DETAIL OF ROOF TRUSS**	DESIGNED BY: **BUILD CHANGE**		

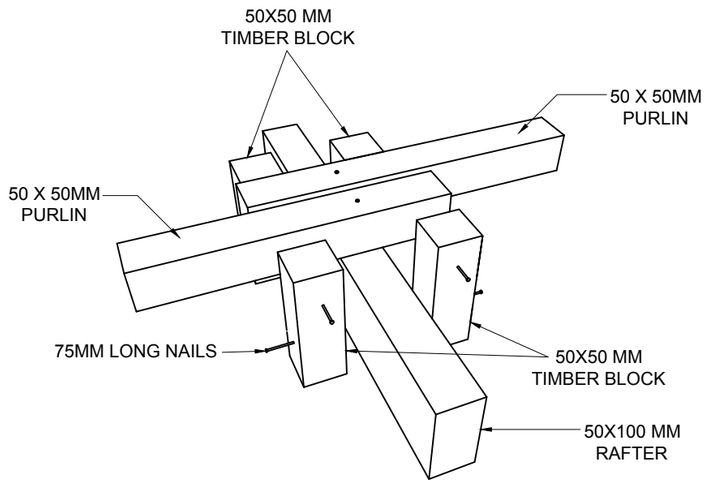
MODEL HOLLOW CONCRETE BLOCK **DOUBLE-STORY**



PLAN



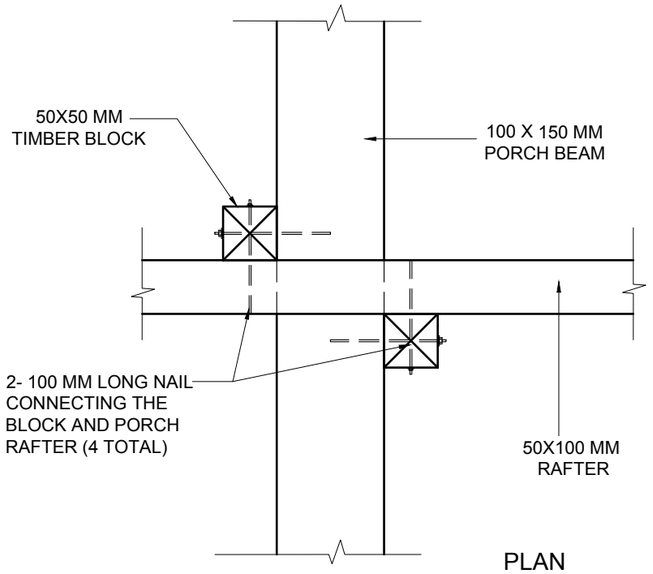
ELEVATION



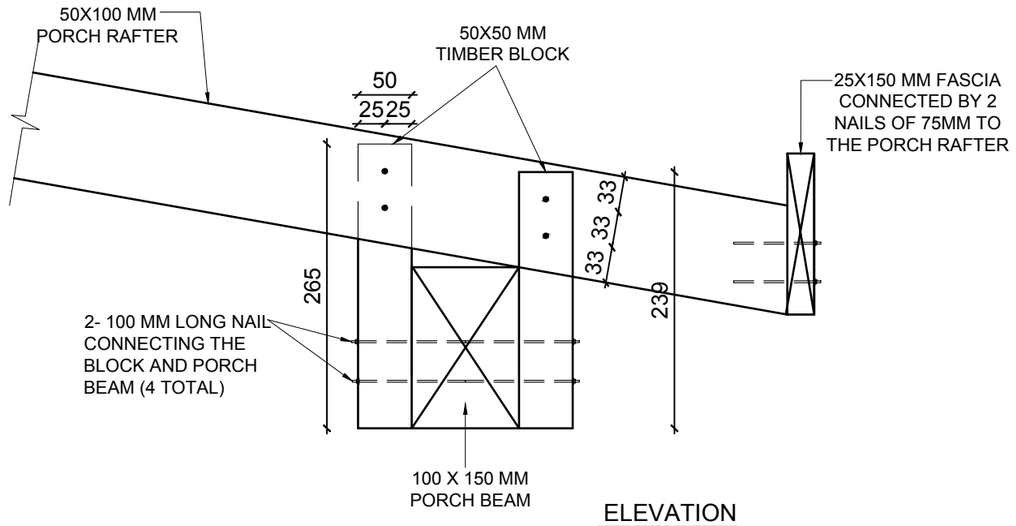
CONNECTION OF PURLIN AND RAFTER OVER DISCONTINUOUS ENDS

ALL DIMENSIONS IN MM

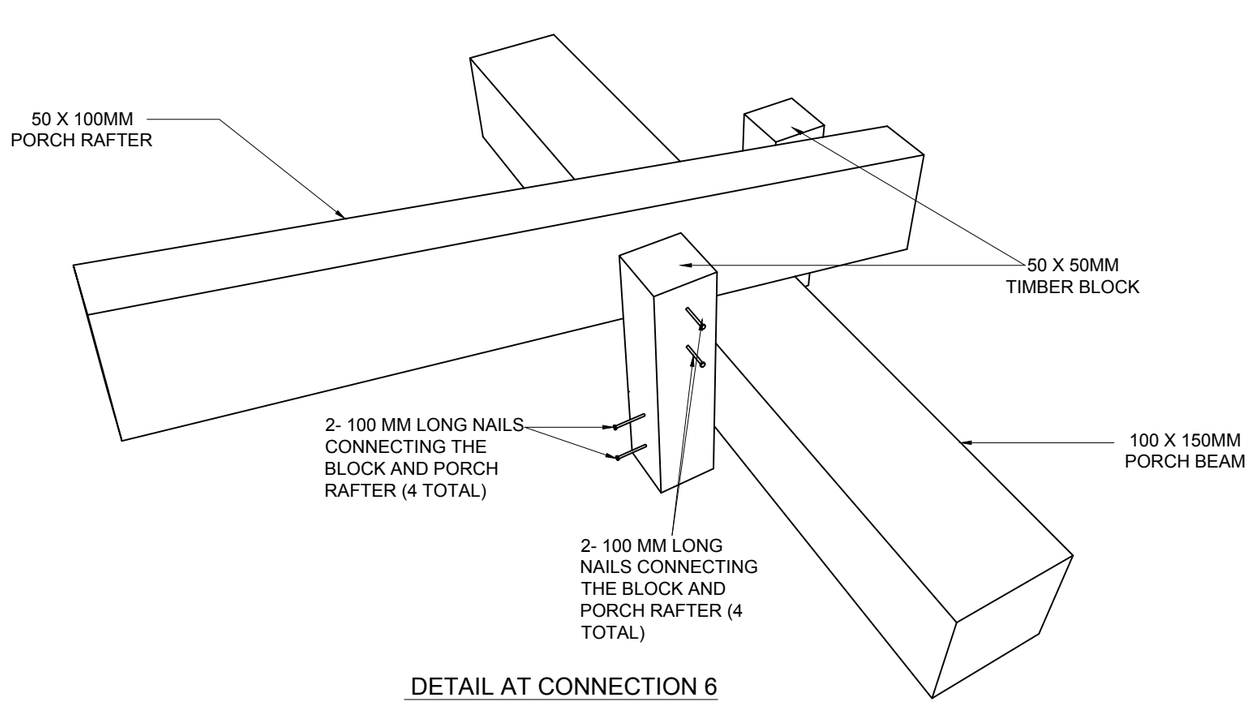
Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-12
	DRAWING TITLE: **DETAIL OF CONNECTIONS**	DESIGNED BY: **BUILD CHANGE**		



PLAN



ELEVATION



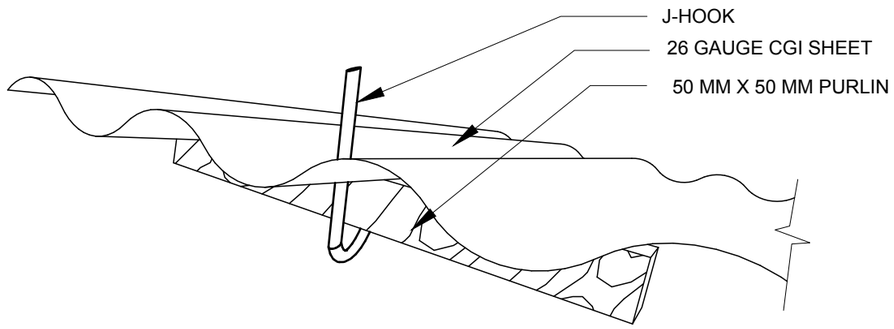
DETAIL AT CONNECTION 6

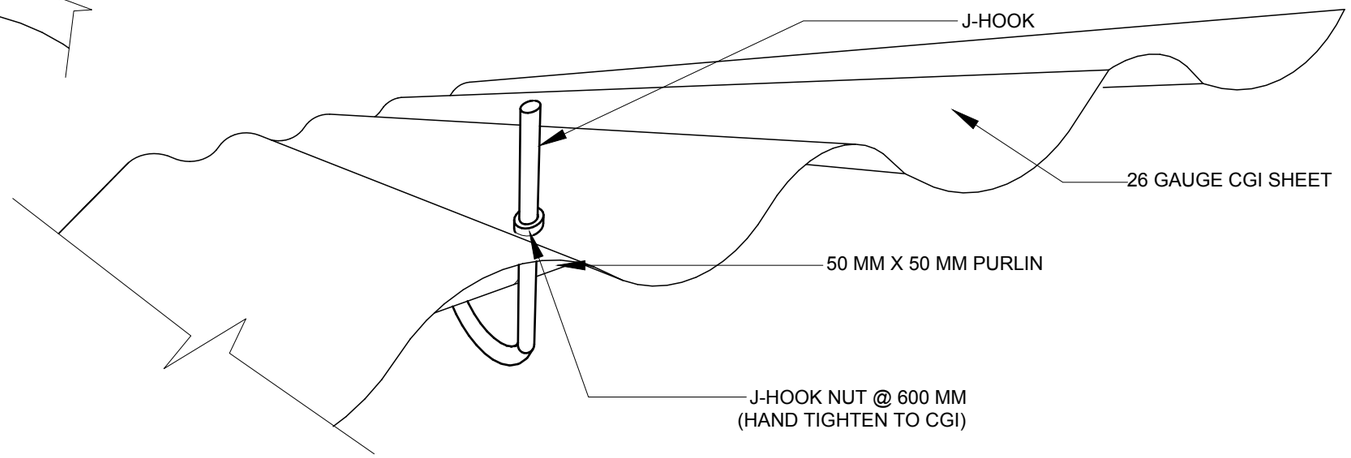
CONNECTION OF PORCH RAFTER AND PORCH BEAM

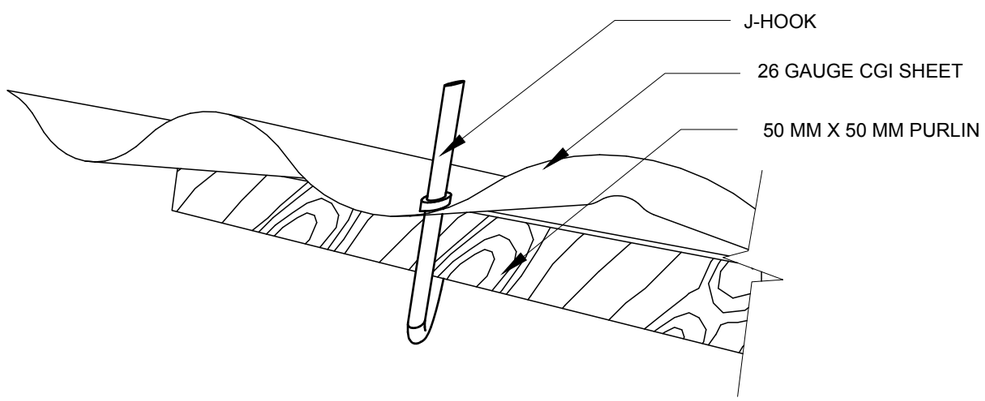
ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-13
	DRAWING TITLE: **DETAIL OF CONNECTIONS**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK **DOUBLE-STORY**





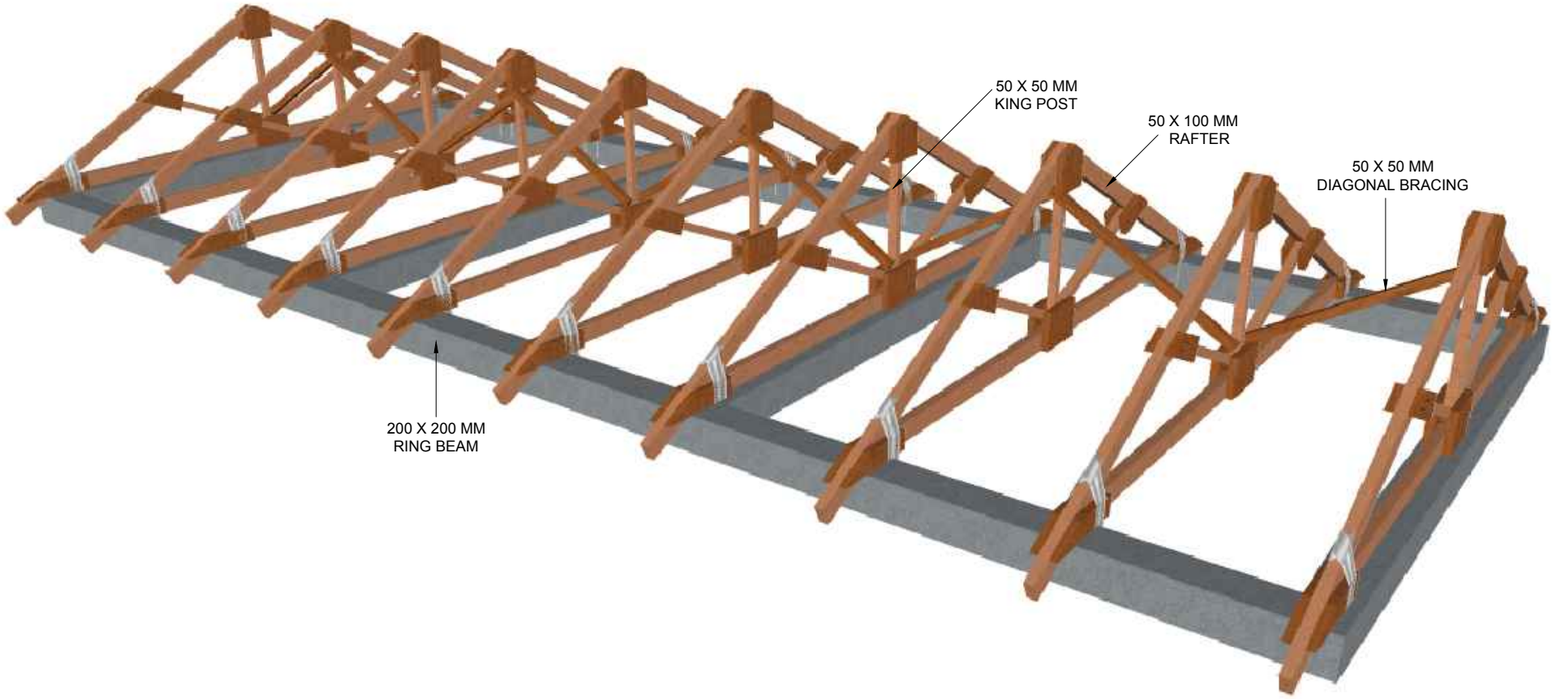


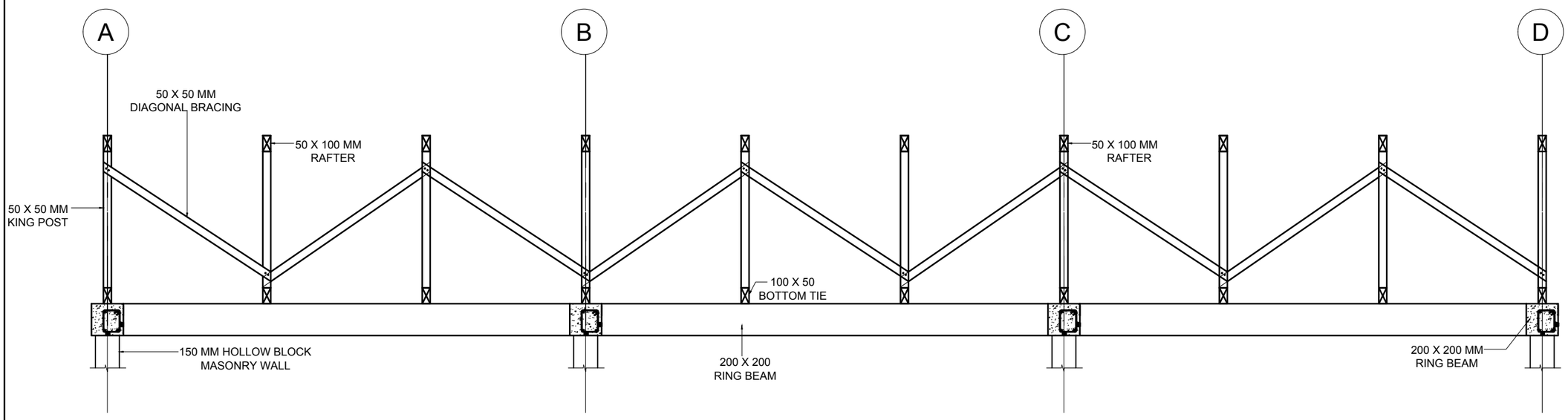
J-HOOK CONNECTION DETAIL

ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT , 2016	T-14
	DRAWING TITLE: **J-HOOK DETAIL**	DESIGNED BY: **BUILD CHANGE**		

MODEL HOLLOW CONCRETE BLOCK **DOUBLE-STORY**

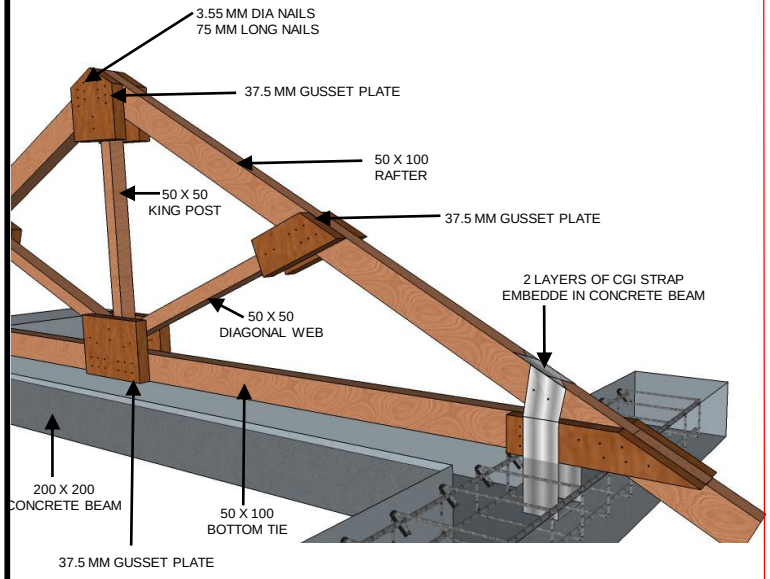


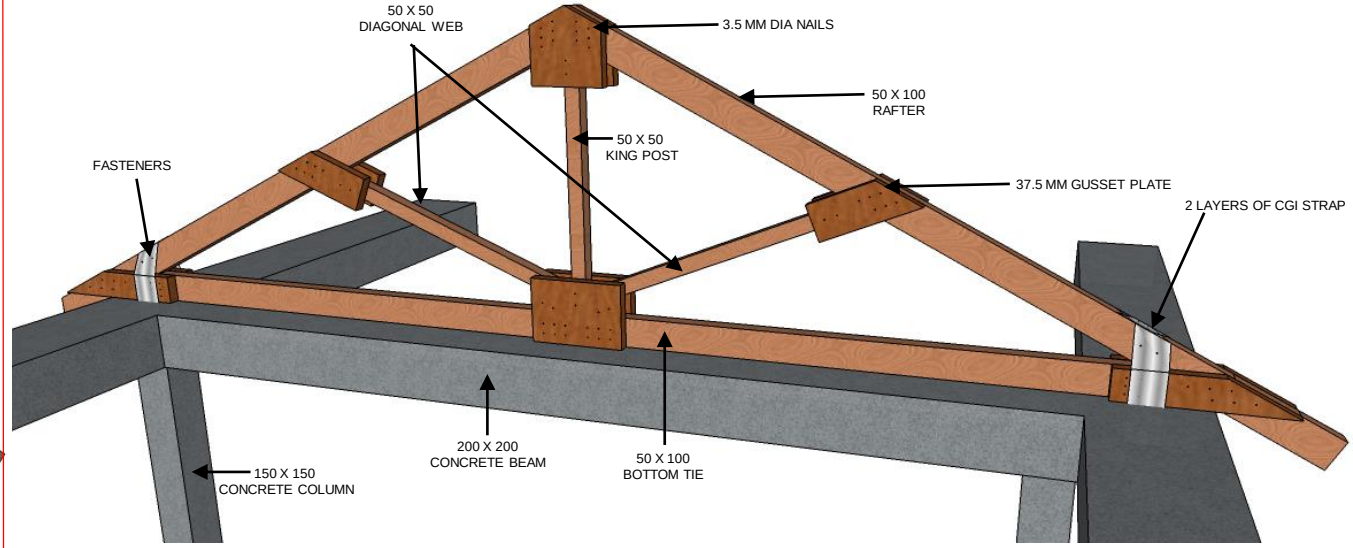


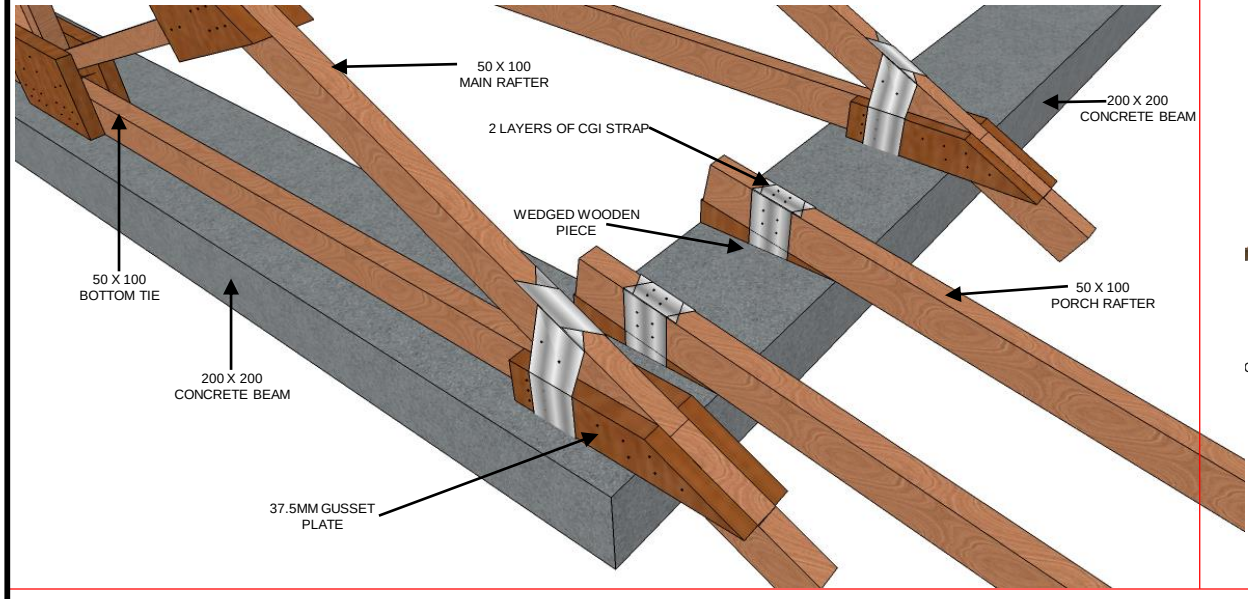
DETAIL OF CROSS BRACING

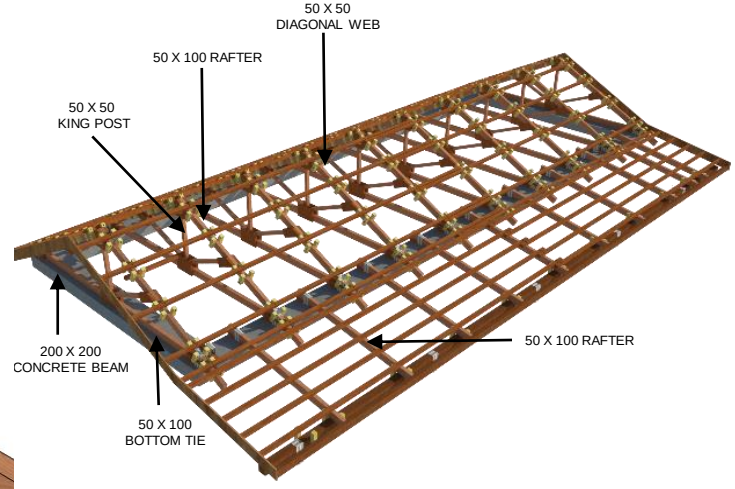
ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-15
	DRAWING TITLE: **DETAIL OF CROSS BRACING**	DESIGNED BY: **BUILD CHANGE**		

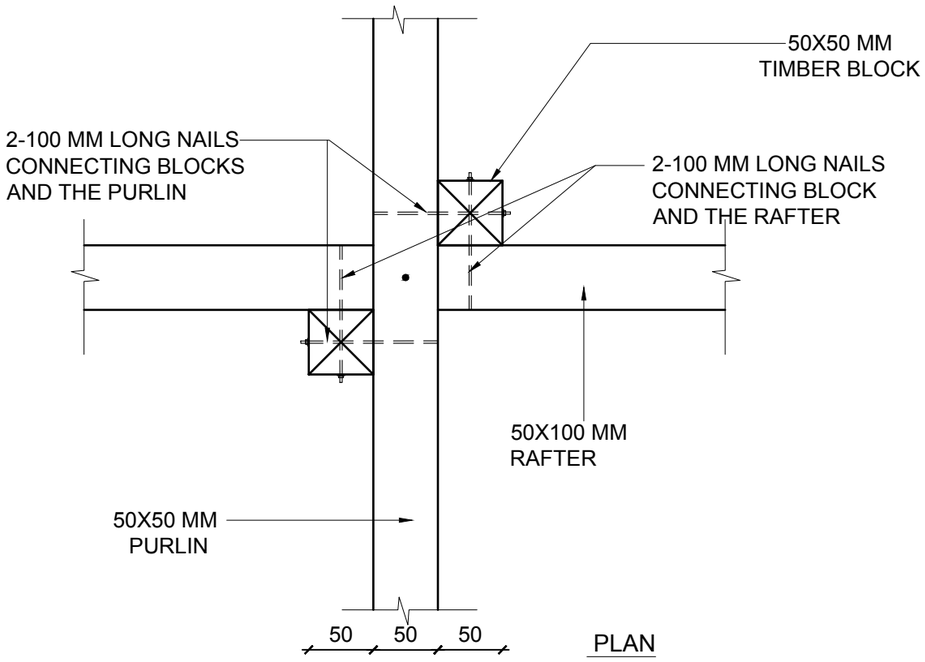






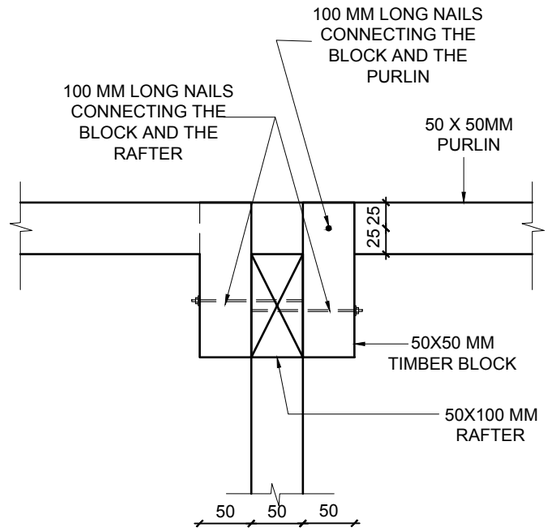


Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE: 1:50	DATE SEPT, 2016	T-16
	DRAWING TITLE: **3 DIMENTIONAL VIEWS OF ROOF**	DESIGNED BY: **BUILD CHANGE**		

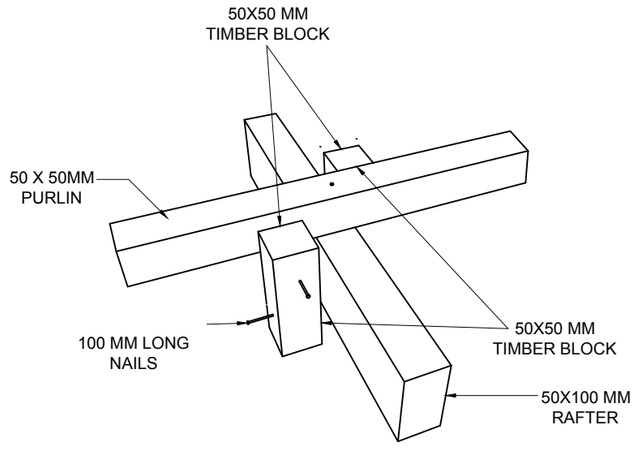


PLAN

PLAN



ELEVATION



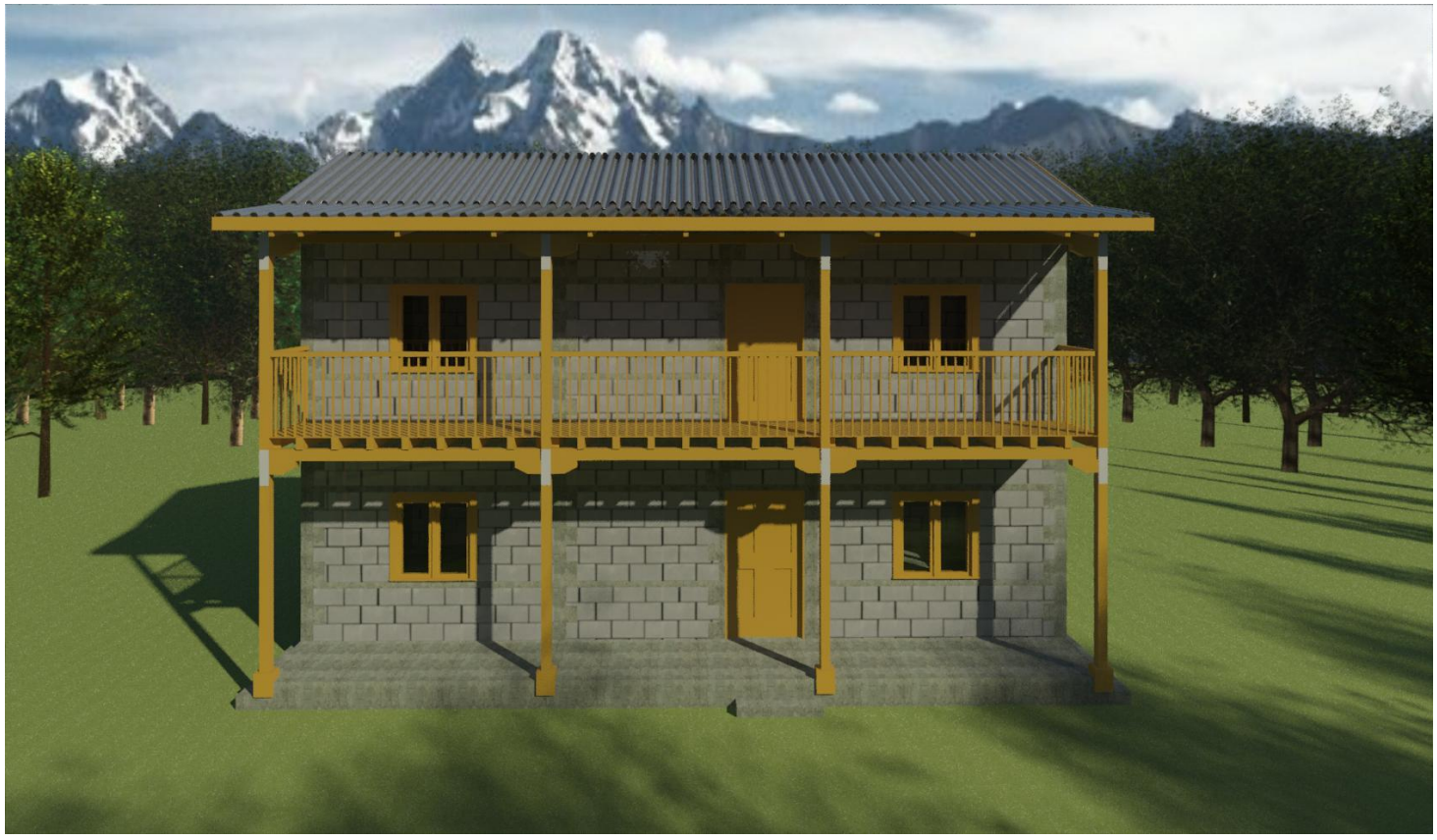
CONNECTION OF PURLIN AND RAFTER OVER DISCONTINUOUS ENDS

CONNECTION OF PURLIN AND RAFTER OVER DISCONTINUOUS ENDS

ALL DIMENSIONS IN MM

Nepal Housing Reconstruction Programme	TYPE OF HOUSE: **MODEL HOLLOW CONCRETE BLOCK**	SCALE:	DATE: SEPT, 2016	T-17
	DRAWING TITLE: **DETAIL OF CROSS BRACING**	DESIGNED BY: **BUILD CHANGE**		

QUANTITY ESTIMATION



SUMMARY OF QUANTITY ESTIMATE

SUMMARY OF QUANTITY

Masonry

	Manpower		Material													
	Skilled	Unskilled	Stone	Hollow Block	Cement	Sand	Aggregate	Wood	Ply Wood	Glass	Local Wood for form work	Bar	Binding Wire	Soil	Water	CGI Sheet
Unit	Md	Md	Cum.	Nos.	Bags	Cum.	Cum.	Cum.	Sq.m	Sq.m	Cum.	kg	Kg	Cum.	lit.	Bundle
									19mm							
Upto Plinth Level	39.00	74.00	21.12	0.00	72.00	9.20	1.14	0.00	2.97	0.00	0.07	274.37	2.74	13.09	2227.93	0.00
Super Structure	221.00	265.00	6.78	1330.00	161.00	15.21	11.95	2.11	38.58	3.28	0.57	1502.32	15.02	0.00	3630.97	0.00
Roof	36.00	12.00	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.52
Total	**296.00**	**351.00**	**27.90**	**1330.00**	**233.00**	**24.41**	**13.09**	**3.78**	**41.55**	**3.28**	**0.65**	**1776.69**	**17.77**	**13.09**	**5858.89**	**5.00**