Catalogue of Approved Drawings in Compressed Stabilised Earth Bricks (CSEB)

DESIGN CATALOGUE
FOR RESIDENTIAL BUILDINGS AND SCHOOLS
TABLE OF CONTENTS

I. RESIDENTIAL BUILDINGS

LOAD BEARING CSEB 150 X 300 X 100
1. Single storey house (2 rooms)
2. Single storey house (2 rooms + Kitchen)
3. Single storey + Attic house (3 rooms + Kitchen + Attic)
4. Single storey house (4-5 persons)
5. Single storey house (6-7 persons)

LOAD BEARING CSEB 245 X 245 X 95
6. Single storey + Attic house (3 rooms + Kitchen + Attic)
7. Double storey house (2 rooms + 2 rooms)
8. Double storey house (4 rooms + 4 rooms)

RCC FRAME, CSEB INFILL
9. Double Storey RCC house (3 rooms + Kitchen + 4 rooms)

I. SCHOOLS

LOAD BEARING CSEB 245 X 245 X 95
1. Two classrooms block
2. Three classrooms block

RCC FRAME, CSEB INFILL
1. Two classrooms block
2. Three classrooms block
DRAWINGS OF TWO-ROOM COMPRESSED STABILISED EARTH BLOCK (CSEB) MASONRY BUILDING HAVING BLOCK SIZE 150X300X100 MM
ARCHITECTURAL AND STRUCTURAL DRAWING OF SINGLE STORIED COMPRESSED STABILIZED EARTH BLOCK (CSEB) HAVING SIZE 150MMX300MMX100MM LOAD BEARING MASONRY BUILDING
<table>
<thead>
<tr>
<th>Level</th>
<th>Stone (Cu Ft)</th>
<th>Interlocking Bricks (Nos)</th>
<th>Cement (Bags)</th>
<th>Sand (Cu Ft)</th>
<th>Aggregates (Cu Ft)</th>
<th>Reinforcement Bars (10mm)</th>
<th>Reinforcement Bars (8mm)</th>
<th>CGI Sheet (Kg)</th>
<th>Metal Truss (Bundles)</th>
<th>CGI Sheet (Kg)</th>
<th>Metal Truss (Kg)</th>
<th>Skilled</th>
<th>Unskilled</th>
</tr>
</thead>
<tbody>
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<td>Up to Plinth Level (Including Vertical Reinforcement for whole building)</td>
<td>1401</td>
<td>0</td>
<td>51</td>
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<td>168</td>
<td>224</td>
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<td>0</td>
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<td>89</td>
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<td>148</td>
<td>99</td>
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<td>0</td>
<td>18</td>
<td>53</td>
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<td></td>
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<td>158</td>
<td>4</td>
<td>358</td>
<td>38</td>
<td>131</td>
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</table>
GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover 15mm for all bands.
3. Grade of Concrete M20 (1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works.
5. Grade of Structural Steel Fe 250 for MS steel.
6. Development length 60mm diameter of bar.
7. Lap length Development length.
8. Spacing of stirrups 150mm for C20 grade.
10. Compressive Strength of C30 grade 3.2 MPA.
11. Dimension of CSEB 150x300x100.
ARCHITECTURAL AND STRUCTURAL DRAWINGS OF SINGLE STORY RESIDENTIAL BUILDING USING LOAD BEARING CSEB (150X300X100 MM)
<table>
<thead>
<tr>
<th>Level</th>
<th>Stone Cu Ft</th>
<th>Stone Nos</th>
<th>Interlocking Bricks Bags</th>
<th>Cement Cu Ft</th>
<th>Sand Cu Ft</th>
<th>Aggregates Kg</th>
<th>Reinforcement Bars 10mm Kg</th>
<th>8mm Kg</th>
<th>CGI Sheet Bundles</th>
<th>Metal Truss Kg</th>
<th>Ply Board Sq Ft</th>
<th>Skilled MD</th>
<th>Unskilled MD</th>
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<td>58</td>
<td>237</td>
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<td>70</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>29</td>
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<tr>
<td>Attic</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>5</td>
<td>598</td>
<td>97</td>
<td>53</td>
<td>182</td>
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ATTIC PLAN
AREA = 10 sq.m
Scale 1:50

Roof Plan
Scale 1:50

PROJECT TITLE:
HOUSE Auram CSEB

PROJECT LOCATION:
NEPAL

DRAWING:
ATTIC PLAN AND
ROOF PLAN

DATE: 30.04.2017
SCALE 1:50

BUILD UP NEPAL
THADO DHUNGA-3
JHAMSIKHEL, LALITPUR

DWG. NO.
02
A
ARCHITECTURAL AND STRUCTURAL
DRAWINGS OF SINGLE STORIED (4-5 PERSONS)
COMPRESSED STABILISED EARTH BLOCK
(CSEB) MASONRY BUILDING HAVING BLOCK
SIZE 150X300X100 MM

BUILD UP NEPAL
<table>
<thead>
<tr>
<th>Level</th>
<th>Stone</th>
<th>Interlocking Bricks</th>
<th>Cement</th>
<th>Sand</th>
<th>Aggregates</th>
<th>Reinforcement Bars</th>
<th>CGI Sheet</th>
<th>Metal Truss</th>
<th>Labours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cu Ft</td>
<td>Nos</td>
<td>Bags</td>
<td>Cu Ft</td>
<td>Cu Ft</td>
<td>Kg</td>
<td>Kg</td>
<td>Bundles</td>
<td>Kg</td>
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<td>0</td>
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<tr>
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<td>3155</td>
<td>97</td>
<td>422</td>
<td>311</td>
<td>564</td>
<td>231</td>
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</table>
FLOOR PLAN (4-5 PERSON HH)
Area=43 sqm

PROJECT TITLE:
HOUSE in 150x300x100 mm
CSEB
4 to 5 Person House

PROJECT LOCATION:
NEPAL

DRAWING:
FLOOR PLAN & ELEVATION
WITH OPENING SCHEDULE

DESIGN BY:
BIJENDRA SOMARE

DATE: 06.06.2017
SCALE: 1:50

Quantities:
- W1: 3
- W2: 2
- D1: 5
- D2: 1

BUILD UP NEPAL

BUILD UN NEPAL

THADO DELE
JHAMSIKHEL, LALITPUR

DWG. NO.
01 A
ARCHITECTURAL AND STRUCTURAL DRAWINGS OF SINGLE STORIED (6 -7 PERSONS) COMPRESSED STABILISED EARTH BLOCK (CSEB) MASONRY BUILDING HAVING BLOCK SIZE 150X300X100 MM
<table>
<thead>
<tr>
<th>Level</th>
<th>Stone</th>
<th>Interlocking Bricks</th>
<th>Cement</th>
<th>Sand</th>
<th>Aggregates</th>
<th>Reinforcement Bars</th>
<th>CGI Sheet</th>
<th>Metal Truss</th>
<th>Labours</th>
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</thead>
<tbody>
<tr>
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<td>Cu Ft</td>
<td>Nos</td>
<td>Bags</td>
<td>Cu Ft</td>
<td>Cu Ft</td>
<td>10mm</td>
<td>8mm</td>
<td>Kg</td>
<td>Bundles</td>
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<td>0</td>
<td>72</td>
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<td>77</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>530</td>
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<tr>
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<td>577</td>
<td>239</td>
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<td>530</td>
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FLOOR PLAN (6-7 PERSON HH).
Area: 45.6 sqm

<table>
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<th>QUANTITY</th>
<th>W1</th>
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<th>D2</th>
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<tr>
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<td>5</td>
<td>6</td>
<td>1</td>
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GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover
15mm for all bands.
3. Grade of Concrete M20(1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works.
5. Grade of Structural Steel Fe500 for MS Steel.
6. Development length 6D where Ø diameter of bar.
7. Lap length Development length.
8. Spacing of slumps 150mm for horizontal bands.
10. Compressive Strength of CSEB 8.4/4.6
11. Dimension of CSEB 150x300x100.
GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover
15mm for all bands.
3. Grade of Concrete M20(1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works
5. Grade of Structural Steel Fe 250 for MS Steel.
6. Development length 6000, where Ø=diameter of bar.
7. Lap Length: Development length.
8. Spacing of stirups 150mm for horizontal bands.
10. Compressive Strength of CSEB 10.1 MPA.
11. Dimension of CSEB 150x300x100.

BAND DETAIL AT T-JUNCTION
(SILL,LINTEL, FLOOR BAND)
Scale 1:10

BAND DETAIL AT CORNER
(SILL,LINTEL, FLOOR BAND)
Scale 1:10

SECTION "R2-R2" DETAIL
Scale 1:5

BAND DETAIL AT "L" JUNCTION
(LINTEL, FLOOR BAND)
Scale 1:10
ARCHITECTURAL AND STRUCTURAL DRAWINGS OF SINGLE STORY RESIDENTIAL BUILDING USING LOAD BEARING CSEB (240X240X100 MM)
<table>
<thead>
<tr>
<th>Level</th>
<th>Stone Cu Ft</th>
<th>Interlocking Bricks Nos</th>
<th>Cement Bags</th>
<th>Sand Cu Ft</th>
<th>Aggregates Kg</th>
<th>Reinforcement Bars Kg 10mm</th>
<th>Kg 8mm</th>
<th>CGI Sheet Bundles Kg</th>
<th>Metal Truss Sq Ft</th>
<th>Ply Board MD</th>
<th>Skilled MD</th>
<th>Unskilled MD</th>
</tr>
</thead>
<tbody>
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<td>0</td>
<td>52</td>
<td>221</td>
<td>169</td>
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<td>0</td>
<td>0</td>
<td>27</td>
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### Types of CSEB

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<td>D1</td>
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<tr>
<td>D2</td>
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</tr>
<tr>
<td>D3</td>
<td>1</td>
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**Door/window schedule**

Scale: 1:50
ARCHITECTURAL AND STRUCTURAL DRAWING OF DOUBLE STORIED CSEB HOUSE

SUBMITTED BY:
BUILD UP NEPAL
LALITPUR, NEPAL
ARCHITECTURAL AND STRUCTURAL DRAWINGS, DESIGN AND ANALYSIS OF TWO STORIED COMPRESSED STABILIZED EARTH (CSEB) MASONRY RESIDENTIAL BUILDING
ROOF SECTION AT A-A SHOWING RAFTER & PURFLIN DETAILS

GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover
   12mm for all bands
3. Grade of Concrete M20 (1:1.5:3) for all concrete
4. Grade of Steel Fe 500 for all reinforcement works
5. Grade of Structural Steel Fe400 for MS Steel
6. Development length 6x0.5, where
   Ø= diameter of bar
7. Lap length: Development length
8. Spacing of slits 150mm for horizontal bands
9. Cement Mortar 1:6 (Cement:Sand)
10. Compressive Strength of CSEB 3.5 Mpa

VIEW A DETAILS (PLAN)

CONNECTIONS OF RAFTER
WITH ROOF BAND "X2"

SECTION DETAILS "S3-S3"

CONNECTIONS DETAIL AT "Y1"
(RIDGE POINT)

BUILD UP NEPAL
LALITPUR

PROJECT TITLE: HOUSE Aurem CSEB
PROJECT LOCATION: NEPAL
DRAWING: ROOF SECTIONS AND CONNECTION DETAILS
DESIGN BY: BIJENDRA SOMARE
DATE: 08.16.2017
DWG. NO. 08
Architectural and Structural Drawing of Two Storied RC Residential Building
Note: The Mortar Used In the CSEB Masonry is 1:6 (C:S) mortar with thickness 5 mm.
Note: The Mortar Used In the CSEB Masonry is 1:6 (C:S) mortar with thickness 5 mm.
REINFORCEMENT DETAILING IN SLAB

Scale: 1:50

SECTION AT X-X

Scale: 1:40

BUILD UP NEPAL
THADO DHUNGA-3
JHAMSIKHEL, LALITPUR

PROJECT TITLE:
HOUSE in RCC STRUCTURE with
150mm x 300mm x 100mm CSEB walls

PROJECT LOCATION:
NEPAL

DRAWING:
SLAB
REINFORCEMENT DETAILING

DATE: 23.02.2016

DWG. NO. 04 S

BUILD UP NEPAL

GENERAL NOTES:
1. Dimensions to be read only.
2. All dimensions are in feet & inches unless otherwise indicated.
3. The reinforcing details are subject to site requirements.
4. The above dimensions are to be used for design.
5. Reinforcement details shall be used in the design drawings.
6. Discrepancies, if any, shall be reported to the engineer.
7. Reinforcement details are subject to change at the discretion of the engineer.
8. Orders in metric shall be used.

T8@175mm C/C

REINFORCEMENT DETAILING IN SLAB

Scale: 1:50

SECTION AT X-X

Scale: 1:40
SCHOOLS

LOAD BEARING CSEB 245 X 245 X 95
1. Two classrooms block
2. Three classrooms block

RCC FRAME, CSEB INFILL
1. Two classrooms block
2. Three classrooms block
ARCHITECTURAL AND STRUCTURAL DRAWINGS
OF SINGLE STORIED COMPRESSED STABILISED
EARTH BLOCK (CSEB) MASONRY SCHOOL
BUILDING (TWO CLASSROOMS) HAVING BLOCK
SIZE 245X245X100 MM

BUILD UP NEPAL
GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover : 15mm for all bands.
3. Grade of Concrete M20(1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works.
5. Grade of Structural Steel Fe200 for MS Steel.
6. Development length 600x where (d) diameter of bar.
7. Lap length= Development length.
8. Spacing of stirrups 150mm for horizontal bands.
10. Compressive Strength of CSEB is 3.5Mpa.
11. Dimension of CSEB is 245X245 X100 mm.

SECTION "T1-T1"
(FOUNDATION DETAIL)
Scale = 1:20

SECTION "T2-T2"
(FOUNDATION DETAIL)
Scale = 1:20

TRENCH PLAN
Scale = 1:100

Resilient Structures Pvt. Ltd.
KATHMANDU, NEPAL
GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover : 15mm for all bands.
3. Grade of Concrete M20(1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works.
5. Grade of Structural Steel Fe250 for MS Steel.
6. Development length 6D, where D= diameter of bar.
7. Lap length = Development length.
8. Spacing of stirrups 150mm for horizontal bands.
10. Compressive Strength of CSEB is 3.5Mpa.
11. Dimension of CSEB is 245x245x100 mm.

PLINTH BAND PLAN

BAND DETAIL AT CORNER
(PLINTH BAND)
GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover: 15mm for all bands.
3. Grade of Concrete M20(1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works.
5. Grade of Structure Steel Fe250 for MS Steel.
6. Development length 600mm, where Ø= diameter of bar.
7. Lap length= Development length.
8. Spacing of stirrups 150mm for horizontal bands.
10. Compressive Strength of CSEB is 3.5MPa.
11. Dimension of CSEB is 245x245x100 mm.

BUILD UP NEPAL
THADO DHUNGA-3
JHAMSIKHEL, LALITPUR

PROJECT TITLE: SCHOOL IN AURAM CSEB OF SIZE 245X245X100 MM FOR TWO CLASSROOMS BLOCK TYPE DESIGN
PROJECT LOCATION: NEPAL
STRUCTURAL DESIGN BY: RESILIENT STRUCTURES PVT. LTD.
KATHMANDU, NEPAL
DRAWING: VERTICAL REINFORCEMENT PLAN & WALL SECTION DETAILS
DATE: 11.06.2017
DWG. NO: 005
SCALE: S
GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover: 15mm for all bands.
3. Grade of Concrete M20(1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works.
5. Grade of Structural Steel Fe250 for MS Steel.
6. Development length 600 where Ø-diameter of bar.
7. Lap length: Development length.
8. Spacing of stirrups: 150mm for horizontal bands.
10. Compressive Strength of CSEB is 3.5 Mpa.
11. Dimension of CSEB is 245X245 X 100 mm.

PLINTH BAND & METAL POST CONNECTION DETAILS

SECTION DETAILS "S4-S4" & "S5-S5"
ARCHITECTURAL AND STRUCTURAL DRAWINGS
OF SINGLE STORIED COMPRESSED STABILISED
EARTH BLOCK (CSEB) MASONRY SCHOOL
BUILDING (THREE CLASSROOMS) HAVING
BLOCK SIZE 245X245X100 MM

BUILD
UP
NEPAL
BUILD UP NEPAL
THADO DHUNGA-3
JHAMSIKHEL, LALITPUR

PROJECT TITLE:
SCHOOL IN AURAM CSEB OF SIZE
245X245X100 MM FOR THREE
CLASSROOMS BLOCK TYPE DESIGN

PROJECT LOCATION:
NEPAL

DRAWING:
ROOF PLAN

DATE: 11.06.2017
SCALE: 1:50

DWG. NO.
002
A
GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover: 15mm for all bands.
3. Grade of Concrete M20(1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works.
5. Grade of Structural Steel Fe250 for MS Steel.
6. Development length 60D, where d=diameter of bar.
7. Lap length= Development length.
8. Spacing of abutment 150mm for horizontal bands.
10. Compressive Strength of CSEB is 3.5Mpa.
11. Dimension of CSEB is 245x245x100mm.

BUILD UP NEPAL
THADO DHUNGA-3
JHAMSIKHEL, LALITPUR

PROJECT TITLE:
SCHOOL IN AURAM CSEB OF SIZE 245x245x100 MM FOR THREE CLASSROOMS BLOCK TYPE DESIGN

PROJECT LOCATION:
NEPAL

STRUCTURAL DESIGN BY:
RESILIENT STRUCTURE PVT. LTD.
KATHMANDU, NEPAL

DRAWING:
PURLIN & TRUSS PLAN DETAILS

DATE: 11.06.2017
SCALE: 1:100

DWG. NO. 007 S
PLINTH BAND & METAL POST CONNECTION DETAILS

SECTION DETAILS "S4-S4"

SECTION DETAILS "S5-S5"

GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover: 15mm for all bands
3. Grade of Concrete M20(1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works
5. Grade of Structural Steel Fe250 for MS Steel
6. Development length 600 where Φ=diameter of bar.
7. Lap length= Development length.
8. Spacing of stirrups 150mm for horizontal bands.
9. Cement Mortar 1:1 (Cement:Sand)
10. Compressive Strength of CSEB is 3.5MPa.
11. Dimension of CSEB is 245x245 x100 mm.

BUILD UP NEPAL
THADO DHUNGA-3
JHAMSIKHEL, LALITPUR

PROJECT TITLE:
SCHOOL IN AURAM CSEB OF SIZE 245X245X100 MM FOR THREE CLASSROOMS BLOCK TYPE DESIGN

PROJECT LOCATION:
NEPAL

STRUCTURAL DESIGN BY:
RESILIENT STRUCTURE PVT. LTD.
KATHMANDU, NEPAL

DRAWING:
POST & PLINTH BAND CONNECTION DETAIL, BEAM POST CONNECTION DETAIL

DATE: 11.06.2017

DWG. NO. 010
GENERAL NOTES:
1. All dimensions are in mm.
2. Clear Cover: 16mm for all bands.
3. Grade of Concrete M20(1:1.5:3) for all concrete.
4. Grade of Steel Fe 500 for all reinforcement works.
5. Grade of Structural Steel Fe 250 for MS Steel.
6. Development length 6D, where D = diameter of bar.
7. Lap length = Development length.
8. Spacing of stirrups 100mm for horizontal bands.
9. Cement Mortar M1 (Cement:Sand)
10. Compressive Strength of CSEB as 3.5Mpa.
11. Dimension of CSEB is 245X245 X108 mm.

HORIZONTAL BRACING PLAN AT ROOF LEVEL
Scale = 1:50

BRACING CONNECTION DETAILS "B1"
Scale = 1:10

CORNER Gusset PLATE DETAILS
Scale = 1:10

BUILD UP NEPAL
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PROJECT LOCATION:
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REILIENT STRUCTURE PVT. LTD.
KATHMANDU, NEPAL

DRAWING:
BRACING PLAN AND CONNECTION DETAILS
DATE: 11.06.2017
DWG. NO. 011 S
Government of Nepal
Ministry of Education
Department of Education
Sanothimi, Bhaktapur

ARCHITECTURAL AND DETAILED STRUCTURAL DRAWINGS
OF

JANA KALYAN PRIMARY SCHOOL
DHUWAKOT VDC, WARD NO. 2
MULABARI, GORKHA, NEPAL

Submitted by:

BUILD UP NEPAL
THADO DHUNGA, JHAMSIKHEL
LALITPUR
CONCRETE BANDS ARE PROVIDED AT SILL & LINTEL LEVEL HORIZONTALLY
BAND DETAILS
150mm Thk. CSEB Wall

TYPICAL SILL AND LINTEL DETAIL
SECTION THROUGH A-A
SIDE ELEVATION

FRONT ELEVATION

SECTION AT CC

DOOR/WINDOW DETAIL
SCALE 1:50

<table>
<thead>
<tr>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1 6</td>
</tr>
<tr>
<td>D1 2</td>
</tr>
</tbody>
</table>

NOTES:
1. ALL DIMENSIONS ARE IN MILLI METRES
## Foundation Plan

### Foundation Trench Plan

<table>
<thead>
<tr>
<th>Section</th>
<th>Width</th>
<th>Depth of Excavation</th>
<th>Sheet of Founding</th>
<th>Reinforcement</th>
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<tbody>
<tr>
<td>F1</td>
<td>1200</td>
<td>1500</td>
<td>1500</td>
<td>250</td>
</tr>
</tbody>
</table>

### Typical Foundation Detail

- All dimensions are in millimetres.

### Project Details

- **Project Title:** Post Earthquake School Reconstruction Project
- **School Name:** Jana Kalyan Primary School
- **School Location:** Dhuwakot VDC, Ward No. 2, Mulabari, Gorkha, Nepal
- **Drawing:** Trench Plan, Foundation Detail
- **Date:** 22.06.2016
- **Scale:** 1:75
- **Designed By:** Ghanashyam Uperti
- **NEC No.:** 12091 Civil 'A'

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**Note:**

- PCC (1:2:4) 300 mm bricks long
TYPICAL BEAM DETAILING ALONG GRID 1-1

NOTES:
1. ALL DIMENSIONS ARE IN MILLI METRES
CONCRETE BANDS ARE PROVIDED AT SILL & LINTEL LEVEL HORIZONTALLY
BAND DETAILS
150mm Thk. CSEB Wall

TYPICAL SILL AND LINTEL DETAIL
SECTION THROUGH A-A