# STRUCTURE DRAWING

FOR ZONE-2

# DRAWING LIST OF STRUCTURE

| DWG No. | | DRAWING NAME | SCALE |
|---|---|---|---|
| | S-01 | DRAWING LIST | NTS |
| | S-02 | BAR ARRANGEMENT STANDARD | NTS |
| | S-03 | FOUNDATION PLAN AND COLUMN PLAN | 1 : 200 |
| | S-04 | GROUND FLOOR GIRDER AND SLAB PLAN,<br>ROOF FLOOR GIRDER PLAN | 1 : 200 |
| | S-05 | FRAMING ELEVATION LINE X1-19 AND LINE Y1 | 1 : 200 |
| | S-06 | FRAMING ELEVATION LINE Y2 AND Y3 | 1 : 200 |
| | S-07 | COLUMN LIST AND GIRDER LIST | 1 : 25 |
| | | | |

FOR ZONE-2

| PROJECT NAME | | TITLE | SCALE | DATE | DESIGNED | CHECKED | APPROVED | DWG No. |
|---|---|---|---|---|---|---|---|---|
| PROTOTYPE ELEMENTARY SCHOOL BUILDINGS | MINISTRY OF NATIONAL EDUCATION | QUAKE-RESISTANCE SCHOOL BUILDING ONE-STOREY<br>DRAWING LIST | NTS | | | | | S-01 |

1. Processing and Assembly

1-1 Reinforcing bars with dangerous bends, cracks, splits or other defects, may not be used under any circumstances

1-2 The diameter for deformed reinforcing bar shall be conform to Table-2

1-3 Reinforcing splices shall be lap joint, and the lap length shall be conform to Table-3 However, lap joint is not permitted for the reinforcing bar over 29mm Dia. The place of the lap joint shall be in compression zone

1-4 Reinforcing bars shall be cut by shearcuttersorsaws. Gas cutting is permitted where unavoidable, if approved by the Engineer

1-5 Spot welding and arc strike is not permitted for reinforcing bars,

1-6 Install hooks at each end of reinforcing bars.

(1) The main reinforcing bars located at the four corners of a column at lap joint, and at the top of column at the highest story

(2) Hoop, stirrup and yoke bar

2. Minimum thickness of cover concrete for reinforcing bars

| Type of structural elements | | | Minimum thickness of cover concrete |
|---|---|---|---|
| Elements not in contact with soil | Slab and walls | With finishing | 20mm |
| | | No finishing | 30mm |
| | Column Beam | With finishing | 40mm |
| | | No finishing | 40mm |
| Elements contact with soil | Column, beam, floor, slab, wall | | 50mm |
| | Foundation, retaining wall | | 70mm |

3. Minimum clearance between the reinforcing bars

Clearance shall be more than 25mm and 1.25 times the maximum size of coarse aggregate and 1.5 times of largest outsaid diameter of reinforcing bar

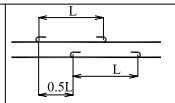
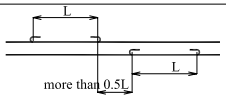
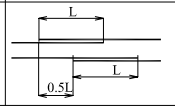
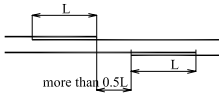

Table-2 Minimum diameter for bending of reinforcing bars

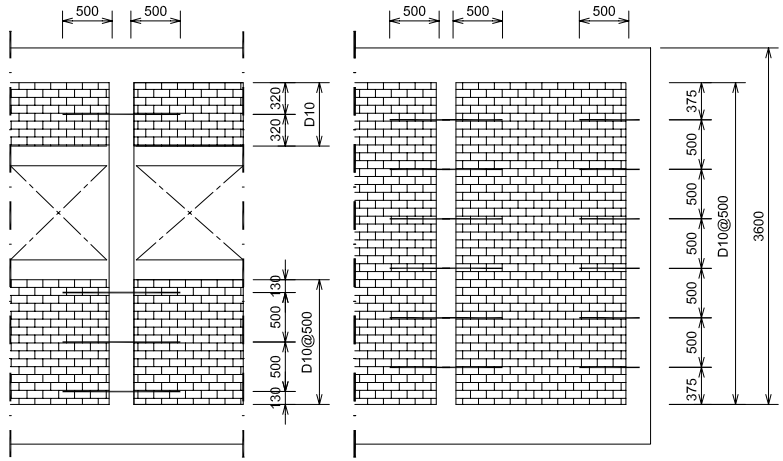
| Bending Shape | | | Under 16mm Dia. | 19 to 38mmDia. | Previous location |
|---|---|---|---|---|---|
| 180° |  | D | More than 3d | More than 4d | Main bars for column and beam etc. |
| 135° |  | D | More than 3d | More than 4d | Stirrup,hoop,spiral bar |
| 90° |  | D | More than 3d | More than 4d | Stirrup,hoop,spiral bar |
| Less than 90° |  | D | More than 4d | More than 6d | |

Table-3 Minimum lap length and Anchor length

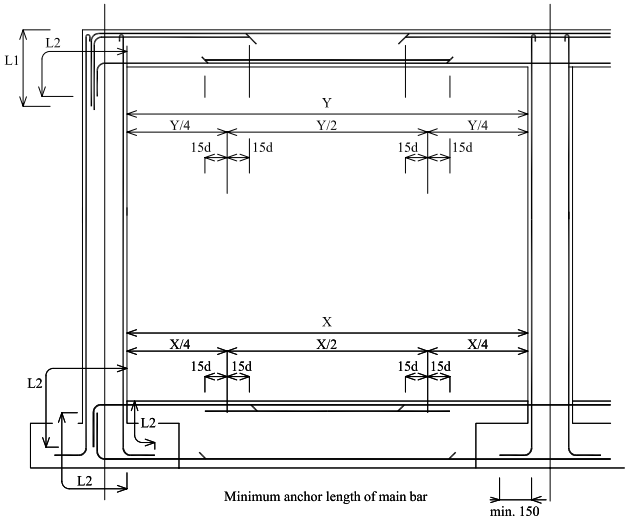
| Concrete Design strength | without hook | | | | with hook | | | |
|---|---|---|---|---|---|---|---|---|
| | L1 | L2 | L3 | | L1 | L2 | L3 | |
| | | | Small Beam | Slab | | | Small Beam | Slab |
| Over Fc28=21N/mm2 but under Fc28=27N/mm2 | 40d | 35d | 25d | 10d and over 150mm | 30d | 25d | 15d | 15d |

Table-4 Location of neighboring joints

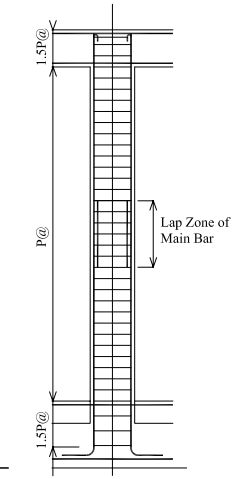
| | | |
|---|---|---|
| with hook |  |  |
| without hook |  |  |



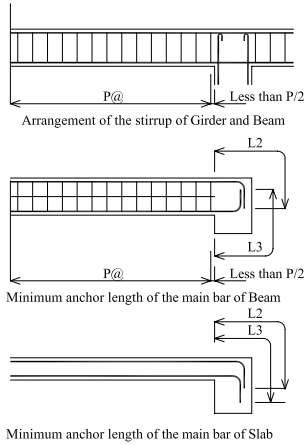

Wall Reinforcement




Minimum anchor length of main bar




Arrangement of the hoop of Column



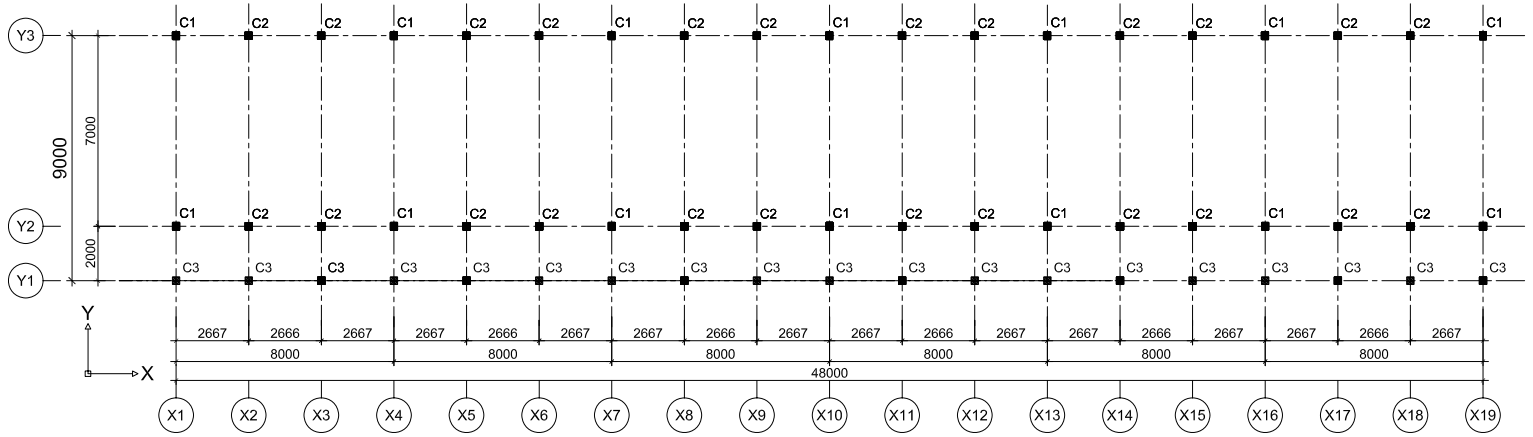

Arrangement of the stirrup of Girder and Beam

Minimum anchor length of the main bar of Beam

Minimum anchor length of the main bar of Slab

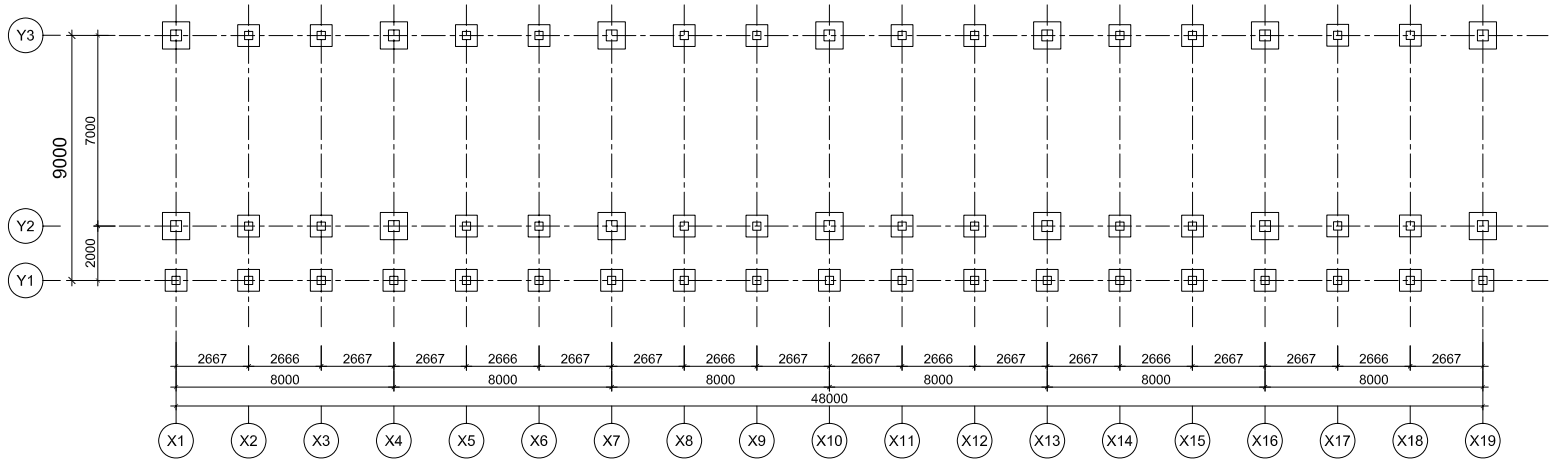
FOR ZONE-2

| PROJECT NAME | | TITLE | SCALE | DATE | DESIGNED | CHECKED | APPROVED | DWG No. |
|---|---|---|---|---|---|---|---|---|
| PROTOTYPE ELEMENTARY SCHOOL BUILDINGS | MINISTRY OF NATIONAL EDUCATION | QUAKE-RESISTANCE SCHOOL BUILDING ONE-STOREY<br>BAR ARRANGEMENT STANDARD | NTS | | | | | S-02 |




COLUMN PLAN
SCALE 1 : 200

| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| C1 | 270X270 | K-250 |
| C2 | 270X270 | K-250 |
| C3 | 270X270 | K-250 |

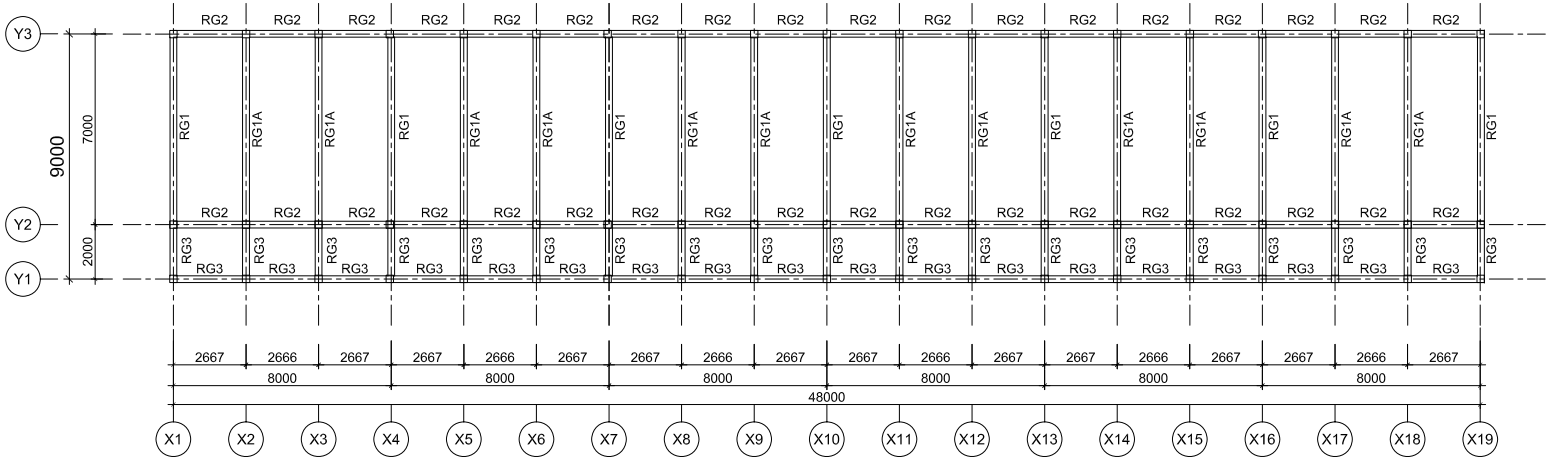



FOUNDATION PLAN
SCALE 1:200

FOUNDATION TYPE IS DETERMAINED BY EACH SITE.
FOUNDATION SHOULD BE BUILT ON REINFORCED CONCRETE

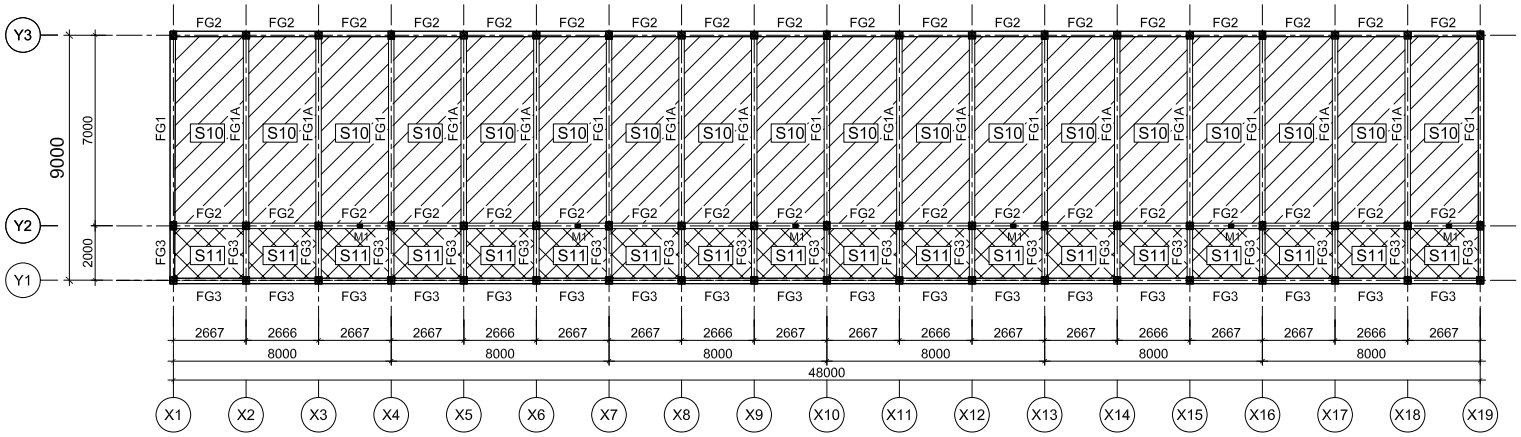
FOR ZONE-2

| PROJECT NAME | | TITLE | SCALE | DATE | DESIGNED | CHECKED | APPROVED | DWG No. |
|---|---|---|---|---|---|---|---|---|
| PROTOTYPE ELEMENTARY SCHOOL BUILDINGS | MINISTRY OF NATIONAL EDUCATION | QUAKE-RESISTANCE SCHOOL BUILDING ONE-STOREY FOUNDATION PLAN AND COLUMN PLAN | 1 : 200 | | | | | S-03 |




ROOF FLOOR GIRDER PLAN
SCALE 1:200

| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| RG1 | 200X350 | K-250 |
| RG1A | 200X350 | K-250 |
| RG2 | 200X350 | K-250 |
| RG3 | 200X350 | K-250 |



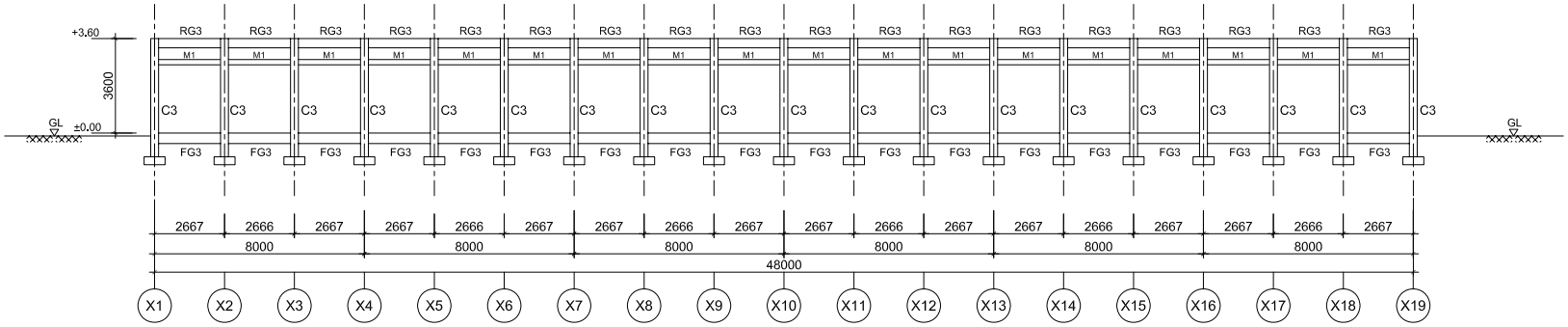

GROUND FLOOR GIRDER AND SLAB PLAN
SCALE 1 : 200

| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| FG1 | 250X450 | K-250 |
| FG1A | 250X400 | K-250 |
| FG2 | 250X400 | K-250 |
| FG3 | 200X400 | K-250 |
| M1 | 200X110 | K-250 |

| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| S10 | 100 | K-175 |
| S11 | 100 | K-175 |

FOR ZONE-2

| PROJECT NAME | | TITLE | SCALE | DATE | DESIGNED | CHECKED | APPROVED | DWG No. |
|---|---|---|---|---|---|---|---|---|
| PROTOTYPE ELEMENTARY SCHOOL BUILDINGS | MINISTRY OF NATIONAL EDUCATION | QUAKE-RESISTANCE SCHOOL BUILDING ONE-STOREY<br>GROUND FLOOR GIRDER AND SLAB PLAN, ROOF FLOOR GIRDER PLAN | 1 : 200 | | | | | S-04 |

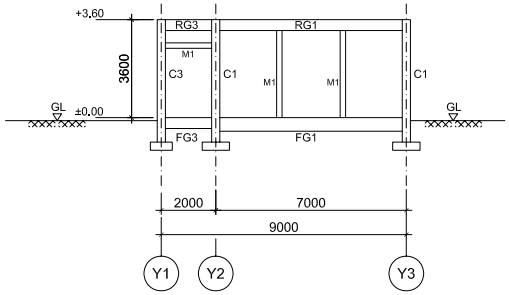



LINE Y1
SCALE 1:200

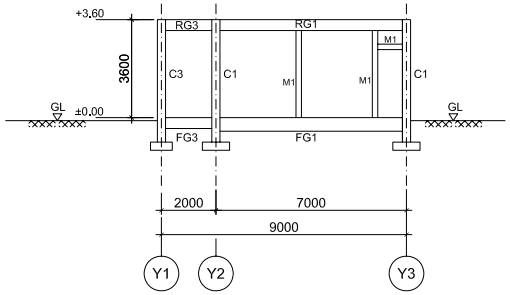
| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| RG1 | 200X350 | K-250 |
| RG1A | 200X350 | K-250 |
| RG2 | 200X350 | K-250 |
| RG3 | 200X350 | K-250 |

| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| FG1 | 250X450 | K-250 |
| FG1A | 250X400 | K-250 |
| FG2 | 250X400 | K-250 |
| FG3 | 200X400 | K-250 |
| M1 | 200X110 | K-250 |

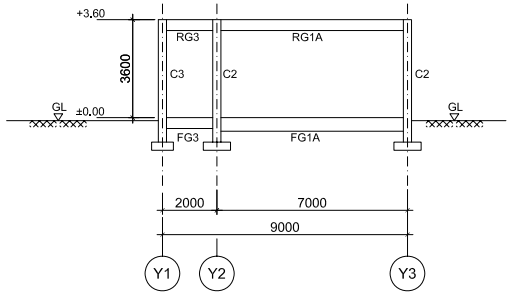
| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| C1 | 270X270 | K-250 |
| C2 | 270X270 | K-250 |
| C3 | 270X270 | K-250 |




LINE X1 AND X19
SCALE 1:200



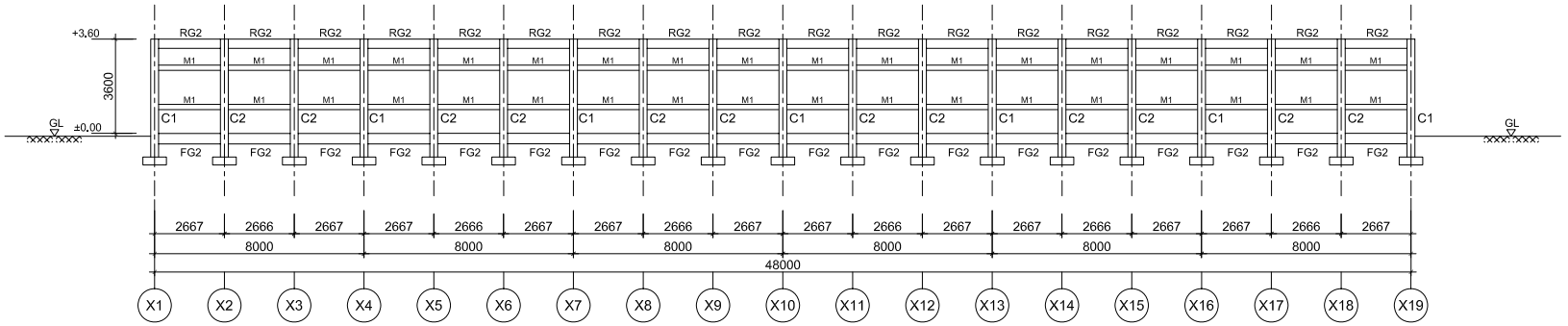

LINE X4,X7,X10,X13 AND X16
SCALE 1:200




LINE X2,X3,X5,X6,X8,X9,X11,X12,X14,15,X17 AND X18
SCALE 1:200

FOR ZONE-2

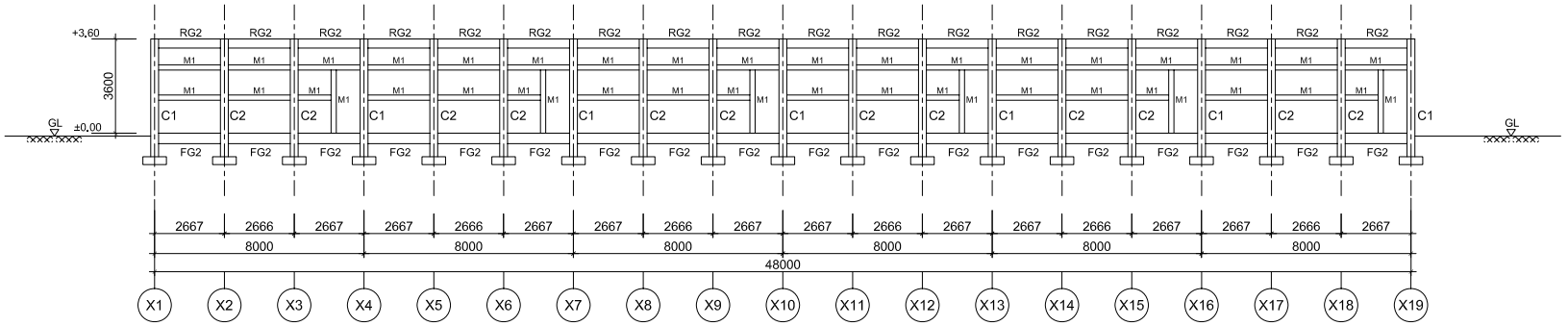
| PROJECT NAME | | TITLE | SCALE | DATE | DESIGNED | CHECKED | APPROVED | DWG No. |
|---|---|---|---|---|---|---|---|---|
| PROTOTYPE ELEMENTARY SCHOOL BUILDINGS | MINISTRY OF NATIONAL EDUCATION | QUAKE-RESISTANCE SCHOOL BUILDING ONE-STOREY<br>FRAMING ELEVATION<br>LINE X1-X19 AND LINE Y1 | 1 : 200 | | | | | S-05 |




LINE Y3
SCALE 1:200

| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| RG1 | 200X350 | K-250 |
| RG1A | 200X350 | K-250 |
| RG2 | 200X350 | K-250 |
| RG3 | 200X350 | K-250 |

| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| FG1 | 250X450 | K-250 |
| FG1A | 250X400 | K-250 |
| FG2 | 250X400 | K-250 |
| FG3 | 200X400 | K-250 |
| M1 | 200X110 | K-250 |



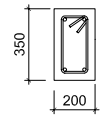
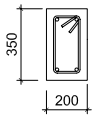
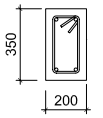
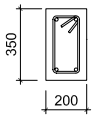

LINE Y2
SCALE 1:200

| MEMBER LIST | | |
|---|---|---|
| TYFE | DIMENTION | QUALITY |
| C1 | 270X270 | K-250 |
| C2 | 270X270 | K-250 |
| C3 | 270X270 | K-250 |

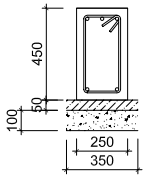
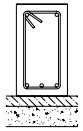
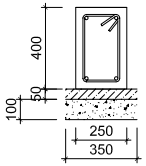
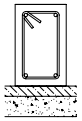
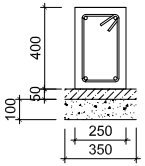
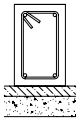
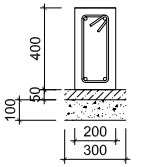
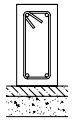
FOR ZONE-2

| PROJECT NAME | | TITLE | SCALE | DATE | DESIGNED | CHECKED | APPROVED | DWG No. |
|---|---|---|---|---|---|---|---|---|
| PROTOTYPE ELEMENTARY SCHOOL BUILDINGS | MINISTRY OF NATIONAL EDUCATION | QUAKE-RESISTANCE SCHOOL BUILDING<br>ONE-STOREY<br>FRAMING ELEVATION<br>LINE Y2 AND Y3 | 1 : 200 | | | | | S-06 |

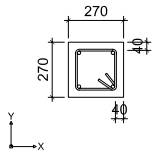
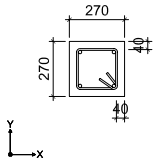
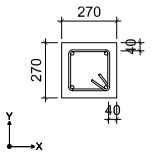
## LIST OF THE ROOF FLOOR GIRDER

| MARK | RG1 | | RG1A | | RG2 | | RG3 | |
|---|---|---|---|---|---|---|---|---|
| POSITION | END | CENTER | END | CENTER | END | CENTER | END | CENTER |
| SECTION |  |  |  |  |  |  |  |  |
| TOP BAR | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 |
| BOTTOM BAR | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 |
| STIRRUP | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 |

## LIST OF THE GROUND FLOOR GIRDER

| MARK | FG1 | | FG1A | | FG2 | | FG3 | |
|---|---|---|---|---|---|---|---|---|
| POSITION | END | CENTER | END | CENTER | END | CENTER | END | CENTER |
| SECTION |  |  |  |  |  |  |  |  |
| TOP BAR | 3-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 |
| BOTTOM BAR | 2-D16 | 3-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 | 2-D16 |
| STIRRUP | □-D10 - 150 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 | □-D10 - 200 |

## LIST OF THE COLUMN (GROUND-ROOF)

| MARK | C1 | C2 | C3 |
|---|---|---|---|
| POSITION | ALL SECTION | ALL SECTION | ALL SECTION |
| SECTION |  |  |  |
| DIMENSION | 270X270 | 270X270 | 270X270 |
| MAIN BAR | 4-D16 | 4-D16 | 4-D16 |
| HOOP | □-D10 -100 | □-D10 -100 | □-D10 -100 |

## LIST OF THE HEADER

| MARK | M1 |
|---|---|
| POSITION | ALL SECTION |
| SECTION |  |
| DIMENSION | 200X110 |
| MAIN BAR | 2-D10 |
| HOOP | ]-D10 -200 |

Note : Material
Concrete K-250
Main Rebar fy : 400 MPa
Confinement Rebar fy : 300 MPa

FOR ZONE-2

| PROJECT NAME | | TITLE | SCALE | DATE | DESIGNED | CHECKED | APPROVED | DWG No. |
|---|---|---|---|---|---|---|---|---|
| PROTOTYPE ELEMENTARY SCHOOL BUILDINGS | MINISTRY OF NATIONAL EDUCATION | QUAKE-RESISTANCE SCHOOL BUILDING ONE-STOREY<br>COLUMN LIST AND GIRDER LIST | 1 : 25 | | | | | S-07 |