



Ministry of Education Swiss Agency for Development and Cooperation, SDC Project for Construction of Primary Schools in Ayeyarwaddy Division Ayeyarwaddy Division, Myanmar

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S&A dESIGN 169G, Pyay Road, 9 Miles Mayangone, Yangon, Myanmar 662100, 722969 sawhtwe@gmail.com Project C3T101

THREE CLASSROOMS + TEACHER ROOM (MAT)

Swiss Agency for Development and Cooperation SDC

Drawing

GENERAL COVER

March 1, 2011

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\$311	CONNECTION DETAIL -1	Monday, February 28, 2011 3:58:23 PM		
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	Project	Drawing		

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GENERAL

LIST OF DRAWINGS

LIST OF DRAWINGS

February 28, 2011

General Specification

- General
- Scope 1.1

The scope of works shall include two types of Emergency Shelter Construction in Avevarwaddy Division.

Two standard designs with plinth levels at 9'-0" and 14'-0" above natural ground level (NGL) as per contract document.

Rules of Practice

The contract document including the drawing and this specification shall be studied thoroughly before executing the work. The work shall be followed the drawing and the specification exactly.

The works, standard procedures and quality of work shall be conformed to the applicable codes, standards and analysis of rates.

All structural drawings shall be read in conjunction with the architectural, plumbing, electrical and mechanical drawings. All chases, chamfers, sockets, openings, fixings and inserts shall be provided in the drawings shall be checked and verified by the contractor and presented to the consultants for approval before concretina.

The contractor shall check all drawings and verify levels and dimensions in advance of the work. Any discrepancies or faults shall be reported to the consultant immediately.

Unless noted otherwise, all levels refer to top of structural concrete.

The contractor shall obtain the engineer's approval before concreting and placing of any blinding concrete layer or reinforcement.

All concrete work shall conform with the building code requirements for reinforced concrete (ACI 318-83).

Ambiauity

The contractor shall submit in writing any ambiguous and/or conflicting points in or between contract documents, for clarification prior to entering into contract. Work not shown or specified in the drawings and specification, but obviously necessary to make the work complete, visually or structurally, shall be performed by the contractor.

Material Testina

Whenever necessary, the contractor shall submit 3 copies of test data of materials to be incorporated in the work at the expense of the contractor. All tests shall be performed in accredited testing laboratory.

Changes in the work 1.5

In case of changes in the work either scope of work or use of material, a request to change shall be submitted in three copies to the engineer. The request shall include following information.

- Purpose and reason of change
- Extent of change
- Cost/benefit of change
- Revised proposal drawing

In case of major changes in the work which directly affect the total cost of the work and time, the cost of change shall be negotiated and settled amona all concerned parties.

In case of minor changes in the work which do not affect the total cost of the work and time, the cost of change shall be incurred to the contractor.

1.6 Damages and Work Guarantee

The contractor shall take responsibility for any kind of damages of the facilities related to the project until transferring of the facilities after completion.

All work and the facilities shall be guaranteed. Period of guarantee shall be at least 2 years. In the event of defective work during the guarantee period, the contractor shall correct such defects without delay at the expense of the contractor.

Connection with Existing Facilities

When existing building and/or services are connected with new works, those parts damaged due to new works shall be made good to original state and to match existing condition or to match new work after the work

Damage caused to any part of existing facilities shall be made good at the expense of the contractor.

- 2. Temporary Works
- 2.1 Temporary Facilities

As necessary, temporary facilities such as site office, storage yard, store, enclosure shall be made at the expense of the contractor. Building required for storage of materials shall be weatherproofed to prevent deterioration materials.

Safety Sian

Safety warning and signboard shall be erected as required.

Site Cleanina

The project site shall be clean. Cleaning time shall be set at the end of the every working day.

- 3. **Earthwork**
- Excavation

Trenches and pits of foundation shall be of sufficient size and depth to enable proper installation of materials.

Any pumping required during the placing of concrete, or for a period of at least 24 hours thereafter, shall be done from a suitable sump pit located outside the concrete forms.

3.2 Leve**l**ina

The plinth of the building shall be at least 1 feet above the existing ground. Unless otherwise specified, area within 10 feet from the designated structure shall be leveled and graded.

Walkway and passages shall be at least 1 feet above the ground or maximum flood water level which ever is greater.

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GENERAL

Drawina

GENERAL SPECIFICATION 1

February 28, 2011

3.3 Disposal

Any refused items shall be properly disposed at the expense of the contractor

3.4 Filling

In case of filling work is needed in the site, the following method shall be applicable;

Marsh, pond, channel, rice field

The top soil about 1' shall be replaced with the same thickness of mixed soil containing 10 to 20 percent of lime or cement in volume ratio. After that layer, filling shall be followed with quality soil. Compaction shall be done every 1' in thickness until soil bearing capacity reach 500 psf or more.

Other

Filling shall be done with quality soil and up to designated height. Filling shall be placed in 1 feet layers and compacted until soil bearing capacity indicates 500 psf or more.

The filling work shall be properly recorded with photographs and shall report to the enaineer.

4. Foundation Work

4.1 Sand Foundation
Material: River sand

Thickness: 2 inches (compacted after watering)

4.2 Compacted Crushed Stone Foundation

Material: Crushed Stone or Broken Brick or Boulder

Thickness: 6 inches (compacted after sand pouring and watering)

5. Concrete Work

5.1 General

The concrete work shall be conformed to ACI-318 or equivalent unless otherwise stated in the construction document

5.2 Specification and Strength

Reinforced conc.:

Cube strenath: 3125 psi at 28 days

Recommended mix: 1:2:4

Place of use: Foundation, column, beam, slab

Plain concrete:

Cube strength: 2000 psi at 28 days

Recommended mix: 1:3:6

Place of use: Apron, passage

Preparation:

Cube strength: 1000 psi at 28 days

Recommended mix: 1:4:8

Place of use: Lean concrete

5.3 Materials

Cement: Ordinary Portland Cement
Cement Brands: Rhinoceros, Elephant

Coarse aggregate: Clean gravel or crushed stone

Fine aggregate: Course river sand with no trace of silt.

Water: Sulphate content shall be less than 1000 ppm

5.4 Concrete Cover

Foundation Work: 3 inches
Beam & Column: 1 1/2 inches
Slab & stair case 3/4 inch

5.5 Formwork and Curina

Form Material: Above ground level - Plywood

Below ground level - soft wood

Form Removing: According to standard code of practice.

Unless other stated in specifically in drawings time for removal of

formwork shall be as follows:

Unloaded beam sides, wall and columns: 1 day
Slabs forms (props not included): 3 days
Props to slabs between beams: 7 days
Props to beam and flat slab: 14 days
Props to cantilevers: 28 days

5.6 Ground Floor Slab

Ground floor slab shall be slab on grade with temperature steel mesh at the top face of the slab. Unless otherwise stated different in the drawing, the ground floor slab thickness shall be 5 inches thick. The temperature steel d3/8"@12" shall be provided at the top face in both directions.

5.7 Upper Floor Slab

Upper floor slab thickness shall be 4 inches thick.

Slab shall be install with 2 inches r.c slab over 2 inches precast slab.

Precast slab properties:

Design live load: 100 psf
Design span: 2.65 m
Tendon diameter: 4 mm
Concrete strength: 30 MPa
Tensile strength: 17500 kg/cm2

6. Reinforcement Work

6.1 General

Reinforcements shall be used as stated in the structural drawings. Bar bending schedule shall be prepared, in condition of insert items, and shall be submitted for approval before starting fabrication of reinforcements.

6.2 Materials

Deformed Bars: Yield strength = 40 ksi Common Bars: Yield strength = 30 ksi

Only genuine materials shall be used. Recycled materials are not allowed. Strength certificates shall be provided. If strength certificates are not available, reinforcing bars shall be tested at every batch. Testing shall consist of tension and bending test, and shall be performed in accredited testing laboratory. Test results shall be submitted in 3 copies.

6.3 Lapping

Not more than 50% of main bars shall be spliced in any one section.

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Drawing

GENERAL

GENERAL SPECIFICATION 2

February 28, 2011

Compression case: 30 x diameter of reinforcina bar 40 x diameter of reinforcing bar Tension case: Ductile case: 50 x diameter of reinforcina bar

Brick Work 7.1 Material

Use good auglity brick of standard size with minimum strenath.

Minimum strength: 1200 psi Use ½" thick mortar joint with 1:3 mix.

Provide 2-1/4" dowel 18" long at every 2'-0" c/c from r.c columns and beams for adjoining brick wall. Use x-met reinforcement for 4 ½" brick wall at every 4th course.

8. Carpentry Work

8.1 Material

The following timbers or equivalent grade are recommended.

Doors and windows: Pvinkado Structural member: Pvinkado Temporary work: Inn-Kanvin

Formwork: Inn-Kanyin and/or Plywood (5 ply)

All timber members shall be disinfected properly before production.

Sectional dimensions shall be in-conformity with provisions of technical specification and all mill works shall be finished dimensions. Locally available lumbers shall be accepted if only minor difference exist between dimensions in drawings and locally available lumber sizes.

Nails for securing plywood, plaster board and the like, shall be aluminum nails, chrome plated nail or otherwise rust proofed nails, length of which shall be as a rule, 2.5 times the thickness of material to be secured.

8.2 Partition

Partition shall be made of 4.5" thick brick wall with plastered on both sides unless otherwise stated differently.

9. Roof Work 9.1 Roof

Material: Colored metal sheet with opp

Thickness: 0.36 mm

All timber members for doors and windows shall be thoroughly seasonal dried and neatl

Fascia cappina, gable ends and ridge capping shall be of 0.3 mm thickness. All fastenings shall be non corrosive water sealing fastening into the purlins with self drilling screw. Purlin and rafter shall be connected with earlain twisted steel bracket.

92 Roof Frame

Recommended timber member sizes for roof frame structure are as follows

Material: Pvinkado Main Truss Members and Rafters: 5"x2" Braces, Strut and Collars: 4"x2" Purlin, Non Structural Members: 3"x2" 8"x1" Faves:

Plaster Work

Preparation

Prior to starting of plastering work, the underlying concrete surface or brick wall shall be thoroughly cleaned by water.

10.2 Mix

Mix ratio of cement and sand shall be as follows.

Surface plastering: Filling and adjustments: 1:4

10.3 Minimum Thickness

Minimum thickness of plastering work shall be as follows. $(\frac{1}{2}" + \frac{1}{4}")$ thick plaster both sides with 1:3 mix

2. Doors and Windows

Wooden Doors and Windows 11.1

Timber doors and windows shall be produced by either well experienced manufacturers or skilled labors. They shall be well seasoned, dried and disinfected properly.

Material: Pvinkado

Fixing screws: All screws shall be stainless steel and sealed with silicon. Accessories:

Hinges, handles and other accessories shall be made of galvanized steel or aluminum complete with matchina

finish screws. Proiect

GENERAL

GENERAL SPECIFICATION 3

Drawina

February 28, 2011

Hardware 11.2

Doors and windows hardware including hinges, bolts, hooks, brackets shall be in accordance with the drawings. Material shall be products of designated manufacturer.

11.3 Sample

All samples of doors, windows and hardware accessories have to be approved by SDC prior to procurement.

12. Paint Work

12.1 General

Work procedures shall be in conformity with requirement of applicable specification. Plaster surface have to be dried before applying any paint. Surface preparation and paint procedure shall be complied with manufacturer's recommendations.

All wood frames member shall be polished before installation.

Doors and windows: Polished

No of coat: 3 coats and after 1 & 2 coat work with sand

paper

Ready mix paint or Plastic emulsion paint, Each Interior wall & ceilina:

coat must be smoothen by using snad paper.

HPG

Putty one coat and paint 3 coats No of coat:

Interior skirting line: Washable Ready mix paint, UPG Putty one coat and paint 3 coats No of coat: Dark color, up to 6" from floor line Note: (not painted on the stair line)

Interior stainer line: Washable Ready mix paint, UPG No of coat: Putty one coat and paint 3 coats

Note: Light color, up to 2'-6" from floor line and 1'-6"

around the blackboard.

Exterior wall & ceilina: Weather resistant paint, UPG No of coat: Putty one coat and paint 3 coats

Exposed timber: Polished

3 coats and after 1 & 2 coat work with sand paper

No of coat:

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DEVELOPMENT LENGTH (La)

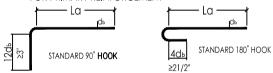
BAR DIA	F.T.L	T.T.L	F.C.L
1/4"	10"	9"	5"
3/8"	15"	11"	6"
1/2"	20"	15"	8"
5/8"	25"	18"	10"
3/4"	30"	22"	11"
7/8"	33"	25"	13"
1"	38"	29"	15"

ABBREVIATIONS

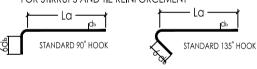
FULL COMPRESSION LAP F.T.L FULL TENSION LENGTH

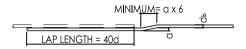
T.T.L TOP BARS TENSION LAP (NEG. MOMENT REGION)

FOR PRIMARY REINFORCEMENT



FOR STIRRUPS AND TIE REINFORCEMENT

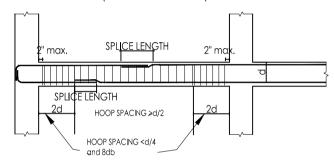




TYPICAL LAP SPLICE CRANKING

LAP SPLICE NOTE:-

- * TOP REBARS SPLICE LOCATION SHOULD BE AT MID-SUPPORT L/2
- * BOTTOM REBARS SPLICE LOCATION SHOULD BE AT END-SUPPORT L/4 (SEE BEAM ELEVATION)



TYPICAL BEAM DETAILS

STRUCTURAL DESIGN NOTE:-

CONCRETE CUBE STRENGTH LEAN CONCRETE

f'c = 1.0 Ksi f'c = 2.0 Ksif'c = 3.125 Ksi

STRUCTURAL CONCRETE REINFORCEMENT STRENGTH

fv = 40 Ksi

1 ft

DEFORMED BARS PLAIN BARS fy = 30 Ksi

DESIGN PARAMETERS

GROUND ELEVATION

PLAIN CONCRETE

FLOOR LIVE LOAD 100 psf **DESIGN WIND SPEED** 125 mph DESIGN EARTHQUAKE ZONE 2A 0.75 tsf ASSUMED BEARING CAPACITY BASE FLOOD ELEVATION 6 ft

Proiect Drawina

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GENERAL

STANDARD DRAWING

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