Islamic Republic of Afghanistan
MINISTRY OF EDUCATION

SCHOOL STANDARDS

Policies, Codes and Designs
Subjects in Presentation

• Standards and Designs
  • Policy guidelines: July 2006, Cost-effective Schools
  • Design and Construction Standards/Menu
  • Specifications

• School and Community Focus
  • SMC, PTA and Community Managed Construction

• Implementation Set-up
  • Center (C-DOC) and Province (P-DOC)
The Policy Document

Cost Effective Schools Construction

Policy Guidelines & Technical Specifications for School Construction

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July 2006

Ministry of Education

Islamic Republic of Afghanistan
Key Policy Guidelines

- Objective
  - Expand network of cost-effective schools equitably and considering local materials, safety and environmental conservation.

- Policy Guidelines
  - The school complex: Classrooms, Staff rooms, Latrines, Water, Disability access/facility, Furniture, Compound wall
  - Site selection criteria for new schools
    - primary. school. max 3 km from village, dist. between two scs. min. 6 km.
    - secondary. school. max 4 km from village, dist. between two secondary school., min 8 km.
  - Students per classroom
    - Gr. 1-6 > 40-50 children, Gr. 7-9 > 35-45 & Gr. 10-12 > 30-40
  - Type of school > 1 sc. school for every 3 primary. Schools in towns and for every 4 primary. Schools in villages
  - Schools must be registered before construction and land deeds deposited with the Provincial Education Department.
Key Policy Guidelines

• Technical Specifications
  – size
  – structure
  – Construction
  – water and sanitation
  – disability access
  – safety against earthquakes
  – Environmental conservation

• Standard designs incorporating the specifications are included.
Social equity and Quick delivery

• Smaller schools – Wider reach
• Narrower classrooms – use of local materials and skill
• Construction achievable through local contractors
• Construction demanding limited ‘engineering supervision’
• Enhancing prospect of community participation
• Enhancing locally achievable maintenance
Design and Construction

• Class size and School size
  • Two Standards for Class sizes shall be in use:
    – Classroom space shall not be less than 0.7m$^2$/child
    – 7m x 4.3m for traditional construction/rural schools
    – 7.5m x 5m for improved construction/urban/peri-urban schools
  • School size (number of classrooms) shall depend on student capacity and type of school

• Design Menu
  – All schools are to be single storeyed for safety reasons.
    • Exception - urban locations with severe land limitations are designed with RCC to allow additional storey as future extension.
Design: Menu of Choices

3-classrooms
- Mud wall
- Clay roof on boards and timber poles

4-classrooms
- Adobe wall
- Jack arch on I-beams

5-classrooms
- Stone wall
- boards on I-beams

6-classrooms
- Burnt-bricks wall

7-classrooms

8-classrooms
- RCC slab and GI sheets double roof

9-classrooms

10-classrooms
- RCC frame and slab
Functional Environment

• Classrooms windows
  – Natural Lighting from left of Children
  – Blackboard position vis-a-vis window side
  – Area of windows: 20% of floor area
  – Proportioned for minimum damage in earthquakes
  – Sufficient ventilation

• Door
  – Opening out for disaster mitigation
  – Wider corridor/paved pathway on outside
  – Disability response
**Functional Environment**

- **Disability response**
  - Provision of ramp access to classrooms
  - Provision of latrine for the disabled with ramp access

- **Orientation for climate**
  - Alternate layouts
    - Hot provinces
    - Cold provinces

- **Layout**
  - Providing for future expansion
  - Play spaces
  - Plants for environment and micro-climate control
Places of High Earthquake Risk

• Zone A (Risk of destruction) – Zone B (Risk of heavy damage)
• List of Places >> handout
Earthquake Hazard

- Higher Occupancy Bldg > Higher vulnerability
  - e.g. Schools >>>> Vulnerability should be reduced

- Tall and Weak Buildings > Higher hazard
  - Schools are better Single storeyed and still better if strengthened/designed for EQ resistance

- Greater risk in Zone A (Destruction likely) as compared to Zone B (Damage likely)

- Greater likelihood of building failure in sites with Weak soil than sites with strong bearing soil

- Greatest Hazard > more than 1 storey, un-strengthened school buildings in Zone A site with weak soil.
**Earthquake Hazard & Un-reinforced Masonry**

<table>
<thead>
<tr>
<th></th>
<th>Zone A</th>
<th>Zone B</th>
<th>Zone C</th>
<th>Zone D</th>
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</thead>
<tbody>
<tr>
<td>Land slides</td>
<td>Always</td>
<td>Avoid</td>
<td>Such</td>
<td>Sites</td>
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<tr>
<td>Liquefaction</td>
<td>Always</td>
<td>Avoid</td>
<td>Such</td>
<td>Sites</td>
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<tr>
<td>Weak soil</td>
<td>Avoid un-reinforced Masonry</td>
<td>NE EQ Measures</td>
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Non-engineered Earthquake Resistance Measures

- Causing Symmetry in Plans
- Openings offset from Wall corners and joints
- Proportions of Openings
- Buttresses >> Sketch
- Tie beams and *Katiba* >> sketch
- Regular Courses and Through stones (for RR stonework)
- Corner ties >> sketch
- Fibrous materials in mud >> sketch
- Uprights
- Construction joints
Details

Wooden board 10x15x 140cm.

Sun dried brick wall.
wide of wall 45cm.

Wooden board 10x5x15cm.
GI Wire reinforcement: replacing wooden ties

Technique

Above the foundation, the GI Wire Reinforcement is placed in every other course of stone or block masonry. At the corner of a wall, cement L-blocks are used. These blocks allow the GI wire to extend vertically to create a column when filled with mortar.
Traditional Detail
Reworked for EQ Resistance

Mud plaster 2.5 + 2.5
Plastic sheet.
Soil 5cm.
Clay 10cm.
One layer reed rush
Wooden board 2.5
Wooden Beam Ø17cm

Sundried Bricks
22x11x6cm

Katiba

Ø15

Wooden frames 6x8cm

Lack board 120x240
RCC Ring Ties
Changing over from timber poles to I-beams
Strengthening RR Stonewall
THROUGH STONES & REGULAR COURSES
Through Stones and Regular Courses

Details
Improving Adobe

alternative for choosing the soil; using both hands, make a little mud roll. The length of the roll is between 5 to 15 cm, the soil is adequate. If the roll is shorter than 5 cm, the soil must not be used. If the unbroken roll is long, sand must be added. (CTAR/COPASA 2002).

Figure 7 – Roll Test (CTAR/COPASA, 2002)

Figure 8 – Control of Microcracking by Adding Straw (PUCP/CIID, 1995)
Social Supervision

• School and Community Focus
  • SMC, PTA, Shura/Community managed construction process
• Community ownership of development
• Quick delivery/decentralization
• Maintenance and sustainability
Implementation Arrangements: Technical Supervision

• C-DOC > Central technical team at Department of Construction/MOE
  » ARCHITECTS, STRUCTURAL ENG, WATER & SANITARY ENG, QUANTITY SURVEYOR, IT SPECIALIST (11)

• P-DOC > Provincial Technical team at PED
  » ARCH or ENG, SUPERVISORS (3)

• D-DOC > Maintenance Technician at DED
  » SUPERVISOR (1)
  • Integration into DOCES & TM / PRR
  • Logistics and Incentives Support