

Report on School Earthquake Safety Program

Prepared by

**Kathmandu Valley Earthquake Risk Management Project (KVERMP),
National Society for Earthquake Technology-Nepal (NSET), Kathmandu, Nepal, under the
Asian Urban Disaster Mitigation Program (AUDMP), of Asian Disaster Preparedness Center (ADPC),
Bangkok, Thailand**



September 2000

Report on School Earthquake Safety Program

Prepared by

Kathmandu Valley Earthquake Risk Management Project (KVERMP),
National Society for Earthquake Technology-Nepal (NSET), Kathmandu, Nepal, under the
Asian Urban Disaster Mitigation Program (AUDMP), of Asian Disaster Preparedness Center (ADPC), Bangkok, Thailand.

Introduction

The School Earthquake Safety Program (SES) is one of the project components of KVERMP. This component of the project aims to retrofit public schools in Kathmandu Valley and the outskirts so that the schools are earthquake safe. To operate this project component KVERMP/NSET implemented several step-wise process. This report tries to capture this process in the program operation as of August 2000. As at the time this report is prepared the SES is ongoing.

Program Components and Implementation

The SES Program consist of the following three components:

- Structural Intervention for earthquake – resistant structure;
- Training of Masons,
- Development of Emergency Response Plan including training of teachers, parents, children (drill) and the community.

To implement the above components following steps are taken:

- A. Selection of Target Schools
- B. Pre-implementation Management Activities
- C. Detailed Design of the Intervention (Reconstruction and Retrofit)
- D. Training Curriculum Development, and Earthquake Kit Preparation
- E. Baseline Survey
- F. Implementation

Details on each steps and the current status are given in the following paragraphs.

A. Selection of Target Schools

- 1) Revisited the inventory of 643 public schools, with a total of about 1100 buildings.
- 2) Re-analyzed the survey data of 378 schools (695 school buildings) (desk study)
- 3) Developed criteria for a preliminary selection of target schools for the SES 2000. Following criteria were developed:
 - a) School must have had attended earlier Headmasters' Seminars;
 - b) School should be out of the city core, but within good access;
 - c) Target school buildings should be of moderate size with simple structure;
 - d) Maximum coverage of building typology (material and form-wise), and

e) Simplicity of intervention.

4) Prepared a long-list of 43 schools based upon the above criteria as below.

Chart 3: School Screening Score

Sn.	School name and Address	Building Type	Score	Remark
		(Stry./Fl./Rf./Wall)		
1	Gyan Jyoti LS. School, Chhaling, Bhaktapur	2/F/F/Adobe	90	- All labor from community as per teachers - Reconstruction
2	Vaisnavi S. School, Bhajangal, Kirtipur	1/F/S+M	90	- High commitment - Reconstruction
3	Adinath S. school, Kirtipur-14	2/F/F/S+M	80	- Good site for mason training
4	Kavresthali LS School, Kavresthali, Ktm	2/F/F/ Adobe	80	- Villagers' high concern - Reconstruction
5	Upayogi P School, Sirutar-1, Bkt	2/R/R/B+M	80	- High commitment
6	Arniko S. School, Dadhikot, Bkt.	2/F/F/B+M	80	
7	Himalaya P. School, Thimi	3/F/F/B+M	80	- Building condition very severe. - Reconstruction
8	Bal Bikash S. School, Alapot, Ktm	2/R/F/B+M	80	- DDC budget allocation of 100000 for rep - Follow up by school after visit
9	Nateshwori P. School, Chhaling, Bkt	2/F/F/ B+M	80	Follow up by school management - committee with high request - Reconstruction
10	Bhuvaneshwori S. School, Chyamasing, Bkt	3/R/F/ B+C	70	- Some cash contribution - No labor
11	Gadgade P. School, Kafal chour, Nagarkot	2/R/F/B+M+C	70	- Ethnic group (Tamang) - Retrofitting would be in low cost
12	Balodaya P. School, Dhapakhel, Lalitpur	1/F/Adobe	70	- Very poor community - Hazardous building - Reconstruction
13	Rudrayani S. School, Khokhana, Lalitpur	2/R/R/B+C	70	- Potential heritage site
14	Ichangu Narayan LS School, Ichangu, Ktm	2/F/F/B+M	70	- Under Archeological Department - Within Ichangu temple premise - High number of mason
15	Nagarjun S.School, Goldhunga, Ktm	2/F/F/S+M	70	- Very high no. of mason in community - Follow up by school
16	Baundeshwor S. School, Jhor, Ktm	2/R/R/S+M, B+C	70	- Rural community
17	Lubhu S, School, Lubhu, Lalitpur	2/F/F/B+M	70	- School staff themselves raise some fund - Reconstruction
18	Balsudhar LS. School, Bansbari, Pharping	2/F/F/S+M	70	- School's preference for new construction
19	Kuleshwor S. School, Kuleshwor, Ktm	2/R/F/B+M+C	60	- Urban area, Enthusiastic HM
20	Kitini HS School, Kitini Lalitpur	2/R/B+M	70	- Growing Area
21	Bagbhairab S. School, Champadevi, Kirtipur	2/R/R/S+C	70	
22	Bhairavi LS. School, Gundu, Bkt	2/F/F/S+M	60	- Reconstruction
23	Gyanbijaya LS. School, Dudhpati, Bkt	2/F/F/B+C	60	- Historical building
24	Bhairabi P. School, Khoyaju, Duwakot, Bkt	2/F/F/B+M	60	
25	Mahendra Rastriya S. School, Baluwatar	2/R/R/B+M+C	50	- School plans to add some rooms
26	Adarshasara S. School, Nagbahal, Patan	2/F/F/Adobe	50	- Historical building - School has not right on building

Sn.	School name and Address	Building Type	Score	Remark
		(Stry./Fl./Rf./Wall)		
27	Bhagyodaya HS School, Sankhu	2/F/F/B+M+C	60	-Steep Staircase & Vibrating Floor
28	Ganesh P. School, Sankhu, Ktm.	2/F/F/B+M	60	-Less no. of masons.
29	Toudaha Rastriya S. School, Kirtipur	2/F/F/B+M	50	
30	Hanshabahani P. School, Taulachhen, Bkt	3/F/F/B+M	50	-Low peoples participation
31	Bhramacharini P. School, Kwathndu, Bkt	2/F/F/B+M	50	-Plan to extend building vertically
32	Sarada LS. School, Tilganga, Ktm	2/R/R/B+M+C	40	-No enthusiasm
33	Nirmal Vidhya Pith, Ranamukteshwar, Ktm	-	40	-Historical building
34	Keshchandra P. School, Itumbhal, Ktm	-	40	-Under Guthi
35	Manohar S.School, Gongabu, Ktm	2/R/R/B+C	30	-No community involvment
36	Mitra Sikshyalaya P. School, Chabahil, Ktm	2/R/R/Block	30	-Building is not schools own property
37	Tika Vidyashram S.School, Sanepa, Lalitpur	3/F/F/B+M	30	-No community involvment
38	Kumbeshwor LS. School, Patan	4/R/R/B+C	20	-No intrest
39	Adarsha LS. School, Naxal, Ktm		20	-Rana Durbar -Balmandir
40	Shree Krishna S. School, Dahachouk, Ktm	2/R/R/B+C	10	-No intrest
41	Nilbarahi S. School, Tankeshwor, Ktm			-Not necessary as per HM
42	Budhha Nagar P. School, Budhhanagar, Ktm			-School has no building
43	Bagbhairab S. School, Champadevi, Kirtipur	2/R/R/S+C		

Notes: Stry: storey, Fl. – floor, Rf. – roof, F – flexible, R – rigid, B – brick, M – mud, S – stone, C – cement

- 5) Developed more elaborate criteria for secondary selection, with the purpose of narrowing down the long-list to 20 school buildings. The criteria were:
 - a) Level of commitments for community participation in the program;
 - b) Existing building condition;
 - c) Visibility of the school (possibility of replication effect);
 - d) Availability of temporary class run option, and
 - e) No dispute on land and building ownership.

In addition, several subjective criteria were also used for secondary consideration, which were:

- Availability of local masons in the vicinity;
- Mode/extent of local contribution (cash or in kind or labor);
- Socioeconomic conditions (financial condition of parents);
- Homogeneity/heterogeneity of community, caste, ethnicity;
- Availability of construction materials (sand, aggregate, timber) in the vicinity.

Charts 1 and 2 show the weights given to these criteria and the results.

- 6) KVERMP/NSET engineers (Bishnu Pandey, Ram Thapa, Jitendra Bothara) visited the 43 schools either alone or in a group of two/three. They carried out visual inspection of the school vis-à-vis the results of earlier survey; inspected the school buildings to identify the target building if there were several blocks of buildings; conducted visual assessment of the structural and major non-structural elements, and hold talks with the headmaster/teachers/members of management committee with the purpose of judging the existing conditions against the above mentioned criteria.
- 7) Conducted a detailed assessment of the schools listed and prepared a short-list of 20 schools. The schools thus selected are given in Chart 4 below.