Annex 12: Due Diligence for ECE Rooms

Various levels of due diligence will be done to review structural stability of school buildings / classrooms using a risk management approach. This inter-alia includes; 1) Visual Assessment by AEOs, Data collection on visible cracks, foundation, location, photographs, 2) Visit by PHCIP engineer and 3) using consultants or available tools like ERIK Building Structure (ARCGIS App from GPSS).

PHCIP will prepare a check-list and training manual for visual assessment (structural safety) of ECE classrooms (Cracks in structural elements, Settlements, sagging or tilting of structural members, exposed reinforcement etc.) through a qualified resource. Training on checklists will be made part of training of AEOs at District Level. The checklist will be made part of MOU to be signed between SED through PMIU and school councils. AEOs will process the safety of ECE Classroom structure as per checklist. In case of observation of some cracks, settlement etc. in the building the renovation of ECE Classroom will not be taken up and the observation will be reported to PHCIP. The PHCIP Engineer will visit the site and propose additional remedial measures before start of work, cost of which shall be met out of renovation provisions. If required a consultant will be hired to assess and assure structural safety and stability.

The scope of due diligence for this component shall primarily determine whether the given schools (3400) are at risk of structural damage/failure particularly given known seismic hazards. Risks or vulnerability to other hazards include flood, fire, and electrocution. However there is no consistent data on these risks. Therefore this information will be collected and follow-up actions decided on the basis of the data. Due diligence will cover the complete school and not be limited to the ECE room.

Two levels of due diligence should be done to record risk or vulnerabilities which can affect the safety of a given school / school building. This approach is risk-based and considers available resources. Two levels of diligence will be carried out;

A. Visual Assessment by AEOs after being trained on appropriate data collection tools and protocols,
B. Visit by PHCIP engineer to both schools where issues are identified during the visual assessment and a sub-sample of those deemed to have passed on the basis of the visual assessment.

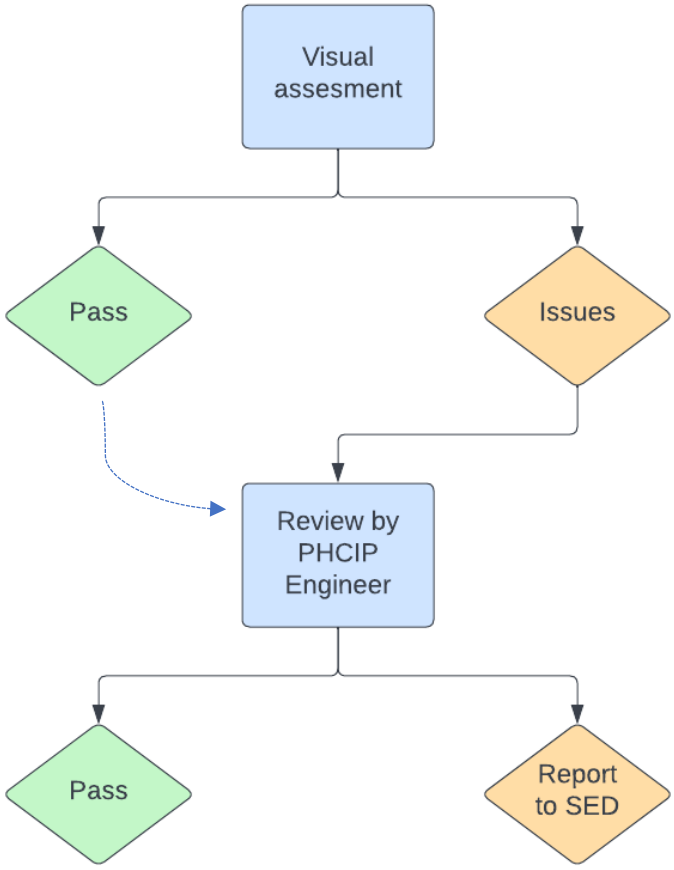
The PHCIP project team will prepare a check-list for visual assessment using a qualified resource person. Training of AEOs will be conducted for the visual assessment and filling of this check-list. For structural safety, the visual assessment should include but not be limited to cracks in structural elements; settlements, sagging or tilting of structural members; exposed reinforcement; poor concrete; signs of failures, structure near slopes etc.

Flood risk should be based on local/user knowledge. Other hazards will recorded if there are any risk or visible indicators during the visual observation. Training on checklists will be made part of training of AEOs at District Level.

The checklist will be made part of MOU to be signed between SED through PMIU and school councils.

In absence of any risks or signs of failure the checklist can be used to place the school on a “Pass” list. In case of observation of cracks, settlement etc. the renovation of ECE Classroom will not be taken up and the observations will be reported to the PHCIP project team. The PHCIP Engineer will visit the site and review the reported issues. Based on engineering judgment the Engineer can either pass or report the school to SED for further consideration.

The list of schools is to be prioritized using the Seismic Zones of Building Code of Pakistan, which are annexed in the following page.[1] The districts with the highest risk should be prioritized for visual assessment. The following decision tree should be used:



Dashed line denotes sample of cases to be visited

[1] Seismic Zones are defined proportional to the earthquake force (lateral) which a building should resist. The higher the Zone factor, the greater the force and demand on the building. The Factor for Zone 3 is 0.3, Zone 2B is 0.2, Zone 2A is 0.15 and Zone 1 is 0.075.

Table 2.2 - Seismic Zones of Tehsils of Pakistan

Tehsil	Seismic Zone	Tehsil	Seismic Zone	Tehsil	Seismic Zone
Punjab					
Attock	2B	Chiniot	2A	**Pakpattan**	2A
Fateh Jang	2B	Shorkot	2A	Arifwala	2A
Hassan Abdal	2B	**Jhelum**	2B	**Rahim Yar Khan**	2A
Jand	2B	Dina	2B	Khanpur	2A
Pindi Gheb	2B	Pind Dadan Khan	2B	Liaquatpur	2A
Bahawalnagar	2A	Sohawa	2B	Sadiqabad	2A
Chishtian	2A	**Kasur**	2A	**Rajanpur**	2A
Fort Abbas	1	Chunian	2A	De-Ex. Area of Rajanpur	2B
Haroonabad	2A	Pattoki	2A	Jampur	2A
Minchinabad	2A	**Khanewal**	2A	Rojhan	2A
Bahawalpur	2A	Jehanian	2A	**Rawalpindi**	2B
Ahmadpur East	2A	Kabirwala	2A	Gujar Khan	2B
Hasilpur	2A	Mian Channu	2A	Kahuta	2B
Khairpur Tamewali	2A	**Khushab**	2B	Kotli Sattian	3
Yazman	2A	Nurpur	2A	Murree	3
Bhakkar	2A	**Lahore City**	2A	Taxila	2B
Darya Khan	2A	Lahore Cantt	2A	**Sahiwal**	2A
Kalur Kot	2B	**Leiah**	2A	Chichawatni	2A
Mankera	2A	Chaubara	2A	**Sargodha**	2A
Chakwal	2B	Karor Lal Esan	2A	Bhalwal	2A
Choa Saidan Shah	2B	**Lodhran**	2A	Kot Momin	2A
Talagang	2B	Dunyapur	2A	Sahiwal	2A
Dera Ghazi Khan	2A	Kahror Pacca	2A	Shahpur	2B
De-Ex.Area of D.G.Khan	2B	**Mandi Bahauddin**	2B	Sillanwali	2A
Taunsa	2B	Malikwal	2B	**Sheikhupura**	2A
Faisalabad City	2A	Phalia	2A	Ferozwala	2A
Chak Jhumra	2A	**Mianwalai**	2B	Muridke	2A
Faisalabad Saddar	2A	Isa Khel	2B	**Nankana Sahib**	2A
Jaranwala	2A	Piplan	2B	Safdarabad	2A
Sammundri	2A	**Multan City**	2A	Sangla Hill	2A
Tandlianwala	2A	Jalalpur Pirwala	2A	Shahkot	2A
Gujranwala City	2A	Multan Saddar	2A	**Sialkot**	2B
Gujranwala Saddar	2A	Shujabad	2A	Daska	2B
Kamoki	2B	**Muzaffargarh**	2A	Pasrur	2B
Nowshera Virkan	2A	Alipur	2A	**Toba Tek Singh**	2A
Wazirabad	2A	Jatoi	2A	Gojra	2A
Gujrat	2B	Kot Addu	2A	Kamalia	2A
Kharian	2B	**Narowal**	2B	**Vehari**	2A
Sarai Alamgir	2B	Shakargarh	2B	Burewala	2A
Hafizabad	2A	**Okara**	2A	Mailsi	2A
Pindi Bhattian	2A	Depalpur	2A		
Jhang	2A	Renala Khurd	2A		

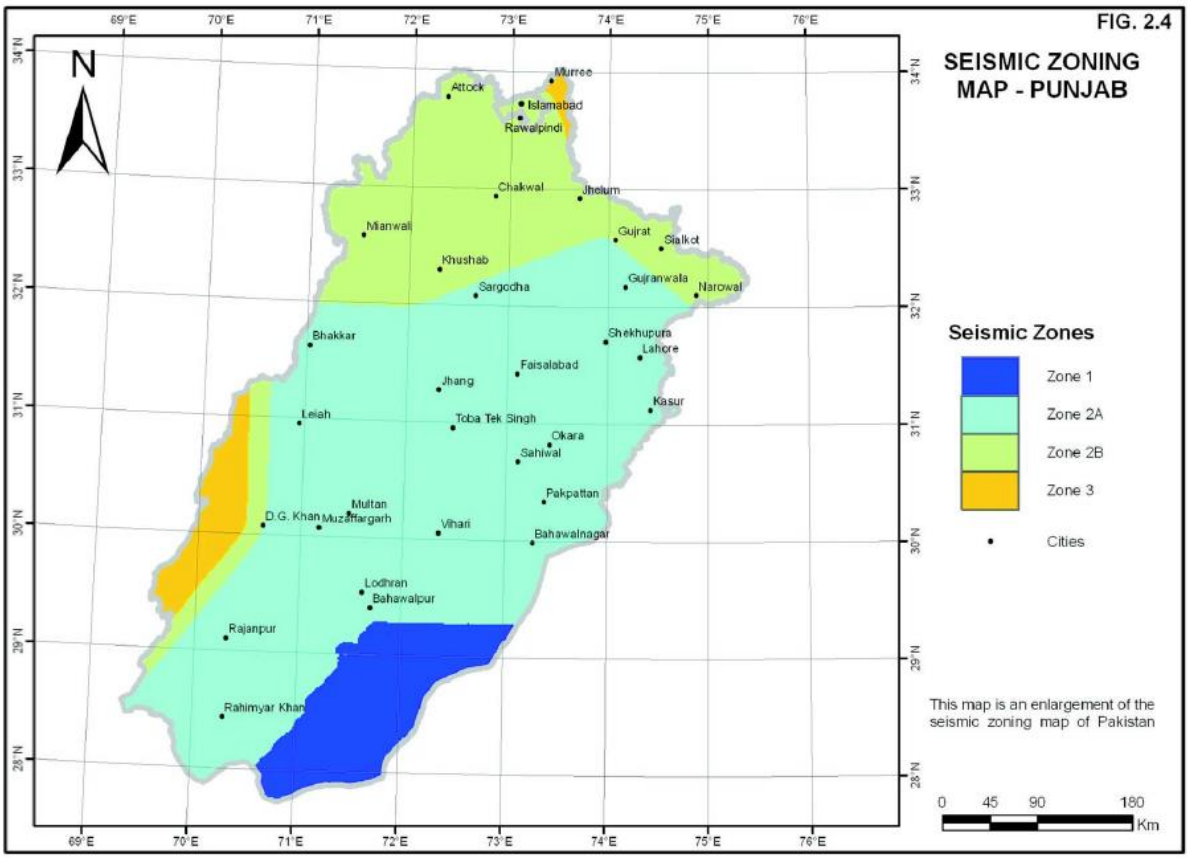


FIG. 2.4
SEISMIC ZONING MAP - PUNJAB
N
69°E
70°E
71°E
72°E
73°E
74°E
75°E
76°E
34°N
33°N
32°N
31°N
30°N
29°N
28°N
Murree
Attock
Islamabad
Rawalpindi
Chakwal
Jhelum
Mianwali
Gujrat
Sialkot
Khushab
Sargodha
Gujranwala
Narowal
Bhakkar
Shekhupura
Lahore
Faisalabad
Jhang
Kasur
Leiah
Toba Tek Singh
Okara
Sahiwal
Pakpattan
Multan
D.G. Khan
Muzaffargarh
Vihari
Bahawalnagar
Lodhran
Bahawalpur
Rajanpur
Rahimyar Khan
Seismic Zones
Zone 1
Zone 2A
Zone 2B
Zone 3
Cities
This map is an enlargement of the seismic zoning map of Pakistan
0
45
90
180
Km