

Stage 3: Design

What to consider before you begin checklist

Safety

Has the design team considered hazards that may not be included in building codes and hazard maps?

Building codes and hazard maps may not be up-to-date. It is important to complete a site investigation before designing a school. Community members can help identify local hazards and provide an overview of their severity and frequency.

Does the design follow local and international building codes?

Building codes may not cover local materials and construction practices. Many good practices have been developed through trial and error with traditional materials –these are sometimes found in guidelines for non-engineered construction. Even standard designs used at several schools sites should be modified to suit local conditions.

Does the design and arrangement of school buildings on the site take into account all hazards?

Long and narrow school blocks, as well as those in L and T configurations, tend to be more heavily damaged in earthquakes. When buildings are placed too close together they may also smash into one another, causing unnecessary damage. In floods, closely spaced blocks may channel water and increase soil erosion around building foundations. Damage can be reduced through careful layout of school blocks. Stifing can be alleviated by carefully orienting the building to increase the air flow.

Will the community help set performance objectives for the design? Will they understand the risks the design may not address?

‘Life safe’ means the building will not collapse and kill people. Some safer school designs ensure the school is life safe, but that is all. The life safe school may wind up being heavily damaged, however, just short of collapse, and be too dangerous to use again. Other safer school designs may reach higher standards and meet the objective of little or no damage in anticipated hazards. Communities should help decide the level of safety their school design will achieve. All should understand what damage may still occur, and risk the safer school design is unable to lessen.

Will non-structural parts of the building be secured to avoid posing a threat to occupants?

Design of elements like parapet walls, veneers, partition walls and railing guards are usually not part of formal structural design. Earthquakes and strong winds can knock these down unless they are properly secured.

Building abilities

Does everyone understand cost-effective strategies for safe design?

Community members may think hazard-resistant construction is costly and complex, and turn it down. Design teams can help communities to understand that hazard-resistant construction means using materials effectively. Simple changes, like a higher portion of cement in concrete, can be effective.

Does the community understand the designs used to create hazard resistance?

Communities in remote regions or in informal urban settlements may design buildings through informal discussions with master builders. Sometimes there can be a distrust of engineers. However, communities need to understand the value of formal engineering design and to be able to ask questions about materials, dimensions, or unfamiliar construction techniques.

Openness and sustainability

Can communities make decisions about parts of the school that do not affect current and future structural safety?

Communities should be able to make design choices that do not affect safety, such as materials for doors and windows, paint and wall finishings. They should also make some decisions about the school block layout. In the future, communities may want to extend or modify the school, and these changes should be accounted for in the design and site layout.

Will communities be able to imitate the safer school techniques in other buildings in the community?

When techniques used in safer school construction can be transferred to housing and commercial construction, the safer school program can serve as a community learning opportunity. Local tradespeople should be consulted about the ability for the design to be transferred to other construction techniques. New techniques (along with risk awareness and training) are likely to be used again, and greatly extend the long-term impact of the program.